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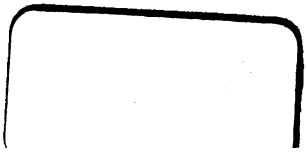

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OF THE

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Yours truly

Monroe Clark

TRANSACTIONS

OF

THE NEW YORK STATE MEDICAL ASSOCIATION,

FOR THE YEAR 1887.

BOSTON MEDICAL
JUN 11 1888
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VOLUME IV.

EDITED FOR THE ASSOCIATION

BY ALFRED LUDLOW CARROLL, M. D.,

OF RICHMOND COUNTY.

CONCORD, N. H.:
Republican Press Association.
NEW YORK: J. H. VAIL & CO.
1888.

CATALOGUED,
R. F. D.
1/11/88.

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CONTENTS.

PAGE

Officers and Council for 1886–'87 1
Committee of Arrangements for 1886–'87 3
Officers and Council for 1887–'88 5
Officers of the Branch Associations 7
List of Fellows in attendance at the Fourth Annual Meeting . . . 10
Delegates from other Medical Organisations and Invited Guests . . 15
Address of Welcome and Report of the Committee of Arrangements. By CHARLES A. LEALE, M. D., of New York County 17
President's Annual Address—Lupus of the Cervix Uteri and Female Genitalia. By ISAAC E. TAYLOR, M. D., of New York County . 20
The Use of Hot Water in Surgery. By THEODORE R. VARICK, M. D., of Jersey City 46
Bichloride of Mercury, its Uses and Abuses. By CHARLES S. WOOD, M. D., of New York County 58
Gall Stones. By ROBERT H. SABIN, M. D., of Albany County . . 66
A Contribution to the study of Hip-Joint Disease. By NATHAN JACOBSON, M. D., of Onondaga County 70
Discussion on the Management of Compound Dislocations of the Ankle Joint. Introductory Remarks. By EDWARD M. MOORE, M. D., of Monroe County 84
Question 1. When should Amputation be practised; and when should other methods be employed? By URI C. LYNDE, M. D., of Erie County 106
Question 2. If Amputation be performed, at what point should it be made to render the Stump most useful, the risks to be encountered being equal? By JOSEPH D. BRYANT, M. D., of New York County 112
Question 3. Should the Luxation be merely reduced, or should some Bony Tissue be removed; and, if so, how much? By FREDERICK HYDE, M. D., of Cortland County; CHARLES W. BROWN, M. D., of Chemung County 115
Question 4. What Dressing and After-Treatment will conduce to the best result with least risk to the Patient? By FREDERIC S. DENNIS, M. D., of New York County 123

Exudative Conjunctivitis. By ALVIN A. HUBBELL, M. D., of Erie County 129
Intra-Rectal Treatment of Haemorrhoids. By LEROY J. BROOKS, M. D., of Chenango County 142
Methods of Applying Cold. By HENRY D. DIDAMA, M. D., of Onondaga County 150
A Case of Pyelitis treated by Kolpo-Uretero-Cystotomy, Irrigation of the Pelvis of the Kidney, and Intra-Vaginal Drainage. By NATHAN BOZEMAN, M. D., of New York County 156
Address on Human Nosography. By JOHN W. S. GOULEY, M. D., of New York County 176
Dislocations of the Elbow Joint. By URI C. LYNDE, M. D., of Erie County 212
Discussion on Typhoid Fever. Introductory Remarks. By ALFRED L. CARROLL, M. D., of Richmond County 226
Question 1. Does the term Typhoid Fever properly include all the Varieties described by observers; or are there other, still undifferentiated, Continued Fevers commonly grouped under this head? *Question* 2. Is Typhoid Fever always the product of a specific contagium from a preëxisting case; or may it arise, *de novo*, from Filth-Fermentation? By EDWARD G. JANEWAY, M. D., of New York County 259
Question 3. What part is played by Micro-organic Ferments in the causation of Enteric Fever? By HERMANN M. BIGGS, M. D., of New York County 267
Question 4. Is there a disease of the Lower Animals transmissible to Man as Typhoid Fever? By D. E. SALMON, D. V. S., of Washington, D. C. 274
Question 5. What Media of Causation or Transmission of Typhoid Fever are to be guarded against in Public or Private Sanitation? By CHARLES A. LEALE, M. D., of New York County; EVERARD D. FERGUSON, M. D., of Rensselaer County 279
Question 6. What are the Complications and Sequelae properly associated with Typhoid Fever? *Question* 7. What are the Indications for Treatment; and are Relapses or untoward Complications favored by some Antipyretic measures? By CHARLES G. STOCKTON, M. D., of Erie County 303
Address on Medicine. By JOHN CRONYN, M. D., of Erie County . 313
Cold as a Therapeutic Agent. By B. L. HOVEY, M. D., of Monroe County 320
Small-Pox in Brooklyn. By NELSON L. NORTH, M. D., of Kings County 331
Specialists. By HENRY C. VAN ZANDT, M. D., of Schenectady County 347

Discussion on Placenta Praevia. Introductory Remarks. By GEORGE TUCKER HARRISON, M. D., of New York County 352
Question 1. In Cases in which the Placenta is Praevia, what Anatomical and Physiological Facts explain the Haemorrhage occurring during pregnancy, and why is Haemorrhage unavoidable during Miscarriage or Labor? By CARLTON C. FREDERICK, M. D., of Erie County; ISAAC E. TAYLOR, M. D., of New York County 361
Question 2. In this Anomaly, what is the Source of the Haemorrhage, and what is the Mechanism of its Arrest? By DARWIN COLVIN, M. D., of Wayne County; S. B. WYLIE MCLEOD, M. D., of New York County 377
Question 3. If Placenta Praevia be diagnosticated during Pregnancy, is the induction of Premature Labor indicated? By T. GAILLARD THOMAS, M. D., of New York County; WILLIAM T. LUSK, M. D., of New York County 388
Question 4. During Labor, when the Placenta is Praevia, what mode of Treatment best subserves the interests of the Mother and Child respectively? Is that plan of Treatment which best conduces to the preservation of the Mother's life incompatible to a certain degree with the Child's interests? By ROLLIN L. BANTA, M. D., of Erie County; JOHN SHRADY, M. D., of New York County 393
Question 5. After Childbirth, in Placenta Praevia, what Therapeutical Measures will most certainly guard against the dangers of Haemorrhage and Septic Infection? By JOHN G. ORTON, M. D., of Broome County; WILLIAM H. ROBB, M. D., of Montgomery County 403
Acute Mania. By JAMES C. HANNAN, M. D., of Rensselaer County 409
A Case of Intra-Rectal Larvae, with Gastritis, in an Infant. By CHARLES S. ALLEN, M. D., of Rensselaer County 417
Two Cases of Epithelioma of the Labium Majus. By THOMAS H. MANLEY, M. D., of New York County 419
Proceedings: Fourth Annual Meeting of the New York State Medical Association 426
Reports of the District Branches 432
Report of the New York County Medical Association 449
Report of the Kings County Medical Association 469
Annual Report of the Council, and Minutes of the Sessions of the Council 472
Report of the Library Committee 476
Memoir of EUGENE LAUER, M. D. 477
Memoir of CHARLES CURTIS FENN GAY, M. D. 478
Memoir of CHRISTOPHER RABORG MCCLELLAN, M. D. 480

Memoir of THOMAS F. ROCHESTER, M. D. 485
Memoir of JARED LINSLY, M. D. 490
Memoirs of JOSEPH CHRISMAN HUTCHISON, M. D., LL. D. 493
Memoirs of ALONZO CLARK, M. D., LL. D. 499
List of Fellows by District and County 511
Alphabetical List of Fellows 532
Deceased Fellows 548
Index 551

BOSTON MEDICAL
JUN 11 1888
LIBRARY ASS'N.

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THIRD DISTRICT, WILLIAM FITCH, M. D.,
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NATHANIEL C. HUSTED,
H. ERNEST SCHMID,
WILLIAM L. WELLS.

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The Fifth Annual Meeting of the Association will be held in New York City, beginning the second Tuesday in October, 1888.

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Catskill, Greene County.
THIRD DISTRICT, CHARLES W. BROWN, M. D.,
Elmira, Chemung County.
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Antwerp, Jefferson County; term expires 1889.
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New York Mills, Oneida County; term expires 1888.

SECOND DISTRICT, THOMAS WILSON, M. D.,
Claverack, Columbia County; term expires 1889.
" " ROBERT C. McEWEN, M. D.,
Saratoga Springs, Saratoga County; term expires 1888.
THIRD DISTRICT, H. O. JEWETT, M. D.,
Cortland, Cortland County; term expires 1889.
" " WILLIAM FITCH, M. D.,
Dryden, Tompkins County; term expires 1888.
FOURTH DISTRICT, S. T. CLARK, M. D.,
Lockport, Niagara County; term expires 1889.
" " JOHN S. JAMISON, M. D.,
Hornellsville, Steuben County; term expires 1888.
FIFTH DISTRICT, JOHN J. TRUAX, M. D.,
17 E. 127th St., New York City; term expires 1889.
" " A. L. CARROLL, M. D.,
New Brighton, Richmond County; term expires 1888.

OFFICERS OF THE BRANCH ASSOCIATIONS FOR 1888.

FIRST OR NORTHERN BRANCH.

The Fourth Annual Meeting will be held at Amsterdam, Montgomery County on the second Tuesday in July, 1888.

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PRESIDENT, BYRON DE WITT, M. D., Oswego, Herkimer County.
SECRETARY, EZRA GRAVES, M. D., Amsterdam, Montgomery County.

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IRA H. ABELL, M. D., Antwerp, Jefferson County.
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G. ALDER BLUMER, M. D., Utica, Oneida County.
BYRON DE WITT, M. D., Oswego, Oswego County.
GUY REUBEN COOK, M. D., Louisville, St. Lawrence County.

SECOND OR EASTERN BRANCH.

The Fourth Annual Meeting will be held at Troy, Rensselaer County, on the fourth Tuesday in June, 1888.

OFFICERS.

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SECRETARY, C. H. BURBECK, M. D., Troy, Rensselaer County.

EXECUTIVE COMMITTEE.

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L. C. DODGE, M. D., Rouse's Point, Clinton County.
THOMAS WILSON, M. D., Claverack, Columbia County.
E. F. EDGERLY, M. D., Moriah Centre, Essex County.

ROBERT SELDEN, M. D., Catskill, Greene County.
Z. ROUSSEAU, M. D., Troy, Rensselaer County.
R. C. McEWEN, M. D., Saratoga Springs, Saratoga County.
J. R. RAYLES, M. D., Schenectady, Schenectady County.
H. F. KINGSLEY, M. D., Schoharie, Schoharie County.
JAMES FERGUSON, M. D., Glens Falls, Warren County.
ALFRED J. LONG, M. D., Whitehall, Washington County.

THIRD OR CENTRAL BRANCH.

The Fourth Annual Meeting will be held at Norwich, Chenango County, on the third Thursday in June, 1888.

OFFICERS.

PRESIDENT, CHARLES W. BROWN, M. D., Elmira, Chemung County.
SECRETARY, LEROY J. BROOKS, M. D., Norwich, Chenango County.

EXECUTIVE COMMITTEE.

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W. R. LAIRD, M. D., Auburn, Cayuga County.
C. L. SQUIRE, M. D., Elmira, Chemung County.
H. C. LYMAN, M. D., Sherburne, Chenango County.
CALEB GREEN, M. D., Homer, Cortland County.
GEORGE C. SMITH, M. D., Delhi, Delaware County.
O. W. BURHYTE, M. D., Brookfield, Madison County.
NATHAN JACOBSON, M. D., Syracuse, Onondaga County.
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ELIAS LESTER, M. D., Seneca Falls, Seneca County.
W. L. AYER, M. D., Owego, Tioga County.
WILLIAM FITCH, M. D., Dryden, Tompkins County.

FOURTH OR WESTERN BRANCH.

The Fourth Annual Meeting will be held at Buffalo, Erie County, on the second Tuesday in May, 1888.

OFFICERS.

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SECRETARY, WILLIAM H. THORNTON, M. D., Buffalo, Erie County.

EXECUTIVE COMMITTEE.

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V. A. ELLSWORTH, M. D., East Otto, Cattaraugus County.
WILLIAM CHACE, M. D., Mayville, Chautauqua County.
F. F. HOYER, M. D., Tonawanda, Erie County.

A. P. JACKSON, M. D., Oakfield, Genesee County.
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R. M. MOORE, M. D., Rochester, Monroe County.
S. T. CLARK, M. D., Lockport, Niagara County.
JAMES H. ALLEN, M. D., Gorham, Ontario County.
H. C. TOMPKINS, M. D., Knowlesville, Orleans County.
N. M. PERRY, M. D., Troupsburgh, Steuben County.
L. S. SPRAGUE, M. D., Williamson, Wayne County.
G. M. PALMER, M. D., Pike, Wyoming County.
D. M. SMITH, M. D., Penn Yan, Yates County.

FIFTH OR SOUTHERN BRANCH.

The Fourth Annual Meeting will be held in Brooklyn, Kings County, on the fourth Tuesday in May, 1888.

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SECRETARY, E. H. SQUIBB, M. D., Brooklyn, Kings County.

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P. BRYNBERG PORTER, M. D., New York, New York County.
W. B. EAGER, M. D., Middletown, Orange County.
WILLIAM YOUNG, M. D., Cold Spring, Putnam County.
EDWIN WEBB, M. D., Hempstead, Queens County.
F. U. JOHNSTON, M. D., New Brighton, Richmond County.
WILLIAM GOVAN, M. D., Stony Point, Rockland County.
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THOMAS W. BENNETT, M. D., Jeffersonville, Sullivan County.
F. HÜHNE, M. D., Rondout, Ulster County.
N. C. HUSTED, M. D., Tarrytown, Westchester County.

LIST OF FELLOWS IN ATTENDANCE AT THE FOURTH ANNUAL MEETING IN NEW YORK CITY.

Held September 27, 28, and 29, 1887.

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John P. Sharer, Little Falls.

JEFFERSON COUNTY.

Ira H. Abell, Antwerp.
J. Mortimer Crawe, Watertown.

MONTGOMERY COUNTY.

R. G. Johnson, Amsterdam.
William H. Robb, Amsterdam.

ONEIDA COUNTY.

A. P. Dodge, Oneida Castle.

OSWEGO COUNTY.

Byron DeWitt, Oswego.
Pascal M. Dowd, Oswego.

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ALBANY COUNTY.

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R. H. Sabin, West Troy.
James P. Marsh, Green Island.
W. B. Sabin, West Troy.

CLINTON COUNTY.

L. C. Dodge, Rouse's Point.
E. M. Lyon, Plattsburgh.

COLUMBIA COUNTY.

J. C. Benham, Hudson.
Thomas Wilson, Claverack.
J. W. Lockwood, Philmont.

ESSEX COUNTY.

Lyman Barton, Willsborough.

GREENE COUNTY.

George Conkling, Durham.
Robert Selden, Catskill.
O. G. Selden, Catskill.

RENSSELAER COUNTY.

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William C Cooper, Troy.
E. D. Ferguson, Troy.
James C. Hannan, Hoosick Falls.
S. W. Lester, Troy.
C. E. Nichols, Troy.
R. H. Ward, Troy.

SARATOGA COUNTY.

Charles W. Keefer, Mechanicville.
R. C. McEwen, Saratoga Springs.
T. B. Reynolds, Saratoga Springs.

SCHENECTADY COUNTY.

George E. McDonald, Schenectady.
H. C. Van Zandt, Schenectady.

WARREN COUNTY.

James Ferguson, Glens Falls.

THIRD DISTRICT.

BROOME COUNTY.

C. W. Greene, Chenango Forks.

CAYUGA COUNTY.

W. R. Laird, Auburn.

CHEMUNG COUNTY.

Charles W. Brown, Elmira.

CHENANGO COUNTY.

George W. Avery, Norwich.
E. S. Lyman, Sherburne.
H. C. Lyman, Sherburne.

CORTLAND COUNTY.

George D. Bradford, Homer.
M. L. Halbert, Cincinnatus.
H. O. Jewett, Cortland.

DELAWARE COUNTY.

William B. Morrow, Walton.
Edward M. Travis, Masonville.

MADISON COUNTY.

Henry W. Carpenter, Oneida.
Martin Cavana, Oneida.
Frank C. Drake, Oneida.

ONONDAGA COUNTY.

H. D. Didama, Syracuse.
Amos S. Edwards, Syracuse.
Jennie Stevens Elder, Lysander.
Nathan Jacobson, Syracuse.

OTSEGO COUNTY.

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Joshua J. Sweet, Unadilla.

TIOGA COUNTY.

W. L. Ayer, Owego.
George M. Cady, Nichols.

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George N. Burwell, Buffalo.
John Cronyn, Buffalo.
Carlton C. Frederick, Buffalo.
W. D. Greene, Buffalo.
Frederick F. Hoyer, Tonawanda.
U. C. Lynde, Buffalo.
Charles G. Stockton, Buffalo.
William H. Thornton, Buffalo.

GENESEE COUNTY.

A. P. Jackson, Oakfield.
William B. Sprague, Pavilion.

MONROE COUNTY.

Charles M. Briggs, Fairport.
B. L. Hovey, Rochester.
E. M. Moore, Rochester.

NIAGARA COUNTY.

George P. Eddy, Lewiston.

ORLEANS COUNTY.

James Chapman, Medina.
Daniel Curtis, Jeddo.

STEUBEN COUNTY.

Daniel J. Chittenden, Addison.
E. E. Wallace, Jasper.

WAYNE COUNTY.

Darwin Colvin, Clyde.

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DUTCHESS COUNTY.

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William Cramer, Poughkeepsie.
C. L. Fletcher, Wing's Station.
J. G. Porteous, Poughkeepsie.
M. T. Pultz, Stanfordville.

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A. N. Bell, Brooklyn.
Stuart H. Benton, Brooklyn.
Julius C. Bierwirth, Brooklyn.
Amos H. Brundage, Brooklyn.
W. F. Gardiner, Brooklyn.
N. W. Leighton, Brooklyn.
T. Mortimer Lloyd, Brooklyn.
William McCollom, Brooklyn.
Eliza J. C. Minard, Brooklyn.
Nelson L. North, Brooklyn.
Henry F. Risch, Brooklyn.
John D. Rushmore, Brooklyn.
W. G. Russell, Brooklyn.
Avery Segur, Brooklyn.
E. H. Squibb, Brooklyn.
E. R. Squibb, Brooklyn.
C. O. H. Steinke, Brooklyn.
J. D. Sullivan, Brooklyn.
William Henry Thayer, Brooklyn.
J. R. Vanderveer, Brooklyn.
George Wieber, Brooklyn.
W. H. Williams, Brooklyn.

NEW YORK COUNTY.

S. Busby Allen, New York.
E. S. F. Arnold, New York.
Glover C. Arnold, New York.
James Bathgate, Morrisania.
Hermann M. Biggs, New York.
Nathan Bozeman, New York.
Nathan G. Bozeman, New York.
Joseph D. Bryant, New York.
Charles Stedman Bull, New York.
Jean F. Chauveau, New York.
T. M. L. Chrystie, New York.
J. E. Comfort, New York.
Walker Curry, New York.
Ellery Denison, New York.
C. Ellery Denison, New York.
Frederic S. Dennis, New York.
A. Palmer Dudley, New York.
Ellsworth Eliot, New York.
Austin Flint, New York.
William H. Flint, New York.
Guido Furman, New York.
John P. Garrish, New York.
Charles R. Gill, Jr., New York.
J. W. S. Gouley, New York.
George Tucker Harrison, New York.
John H. Hinton, New York.
Dwight L. Hubbard, New York.
Samuel T. Hubbard, New York.
E. G. Janeway, New York.
Charles A. Leale, New York.
Anna Lukens, New York.
William T. Lusk, New York.
James R. MacGregor, New York.
Thomas H. Manley, New York.
David Matthews, New York.
S. B. W. McLeod, New York.
J. A. McLochlin, New York.
S. H. McIlroy, New York.
G. C. H. Meier, New York.
William T. Miller, New York.
R. L. Miranda, New York.
John Murphy, New York.
Robert Newman, New York.
John Parsons, Kings Bridge.
Samuel S. Purple, New York.
Ira B. Read, New York.
Augustus D. Ruggles, New York.
Lewis A. Sayre, New York.
Lewis Hall Sayre, New York.
Reginald H. Sayre, New York.
John Shrady, New York.
Isaac E. Taylor, New York.
J. G. Truax, New York.
Joseph G. Wallach, New York.
William T. White, New York.
C. S. Wood, New York.

ORANGE COUNTY.

William B. Eager, Middletown.

RICHMOND COUNTY.

Alfred L. Carroll, New Brighton.
F. U. Johnston, New Brighton.

ROCKLAND COUNTY.

William Govan, Stony Point.

SUFFOLK COUNTY.

William D. Woodend, Huntington.

SULLIVAN COUNTY.

W. H. De Kay, Parksville.

ULSTER COUNTY.

Frederick Hüne, Rondout.

WESTCHESTER COUNTY.

Thomas J Acker, Croton Landing
Nathaniel C. Husted, Tarrytown.
Richmond J. Southworth, Yonkers.

SUMMARY BY DISTRICTS, OF FELLOWS IN ATTENDANCE.

First district,	9
Second district,	26
Third district,	22
Fourth district,	20
Fifth district,	94
Total,	171

DELEGATES FROM OTHER MEDICAL ORGANISATIONS AND INVITED GUESTS IN ATTENDANCE.

CONNECTICUT MEDICAL SOCIETY.

WILLIAM H. CARMALT, M. D., NEW HAVEN.

MASSACHUSETTS MEDICAL SOCIETY.

GEORGE BROWN, M. D., BARRE.

INVITED GUESTS.

CHARLES D. ALTON, M. D., HARTFORD, . . . Connecticut.
S. S. ASHMORE NOAKES, M. D., NICE, ... France.
EDMUND OWEN, M. B., F. R. C. S., LONDON, ... England.
DR. EMILE POUSSIE, 46 Boulevard Henry IV, PARIS, . France.
A. N. READ, M. D., NORWALK, ... Ohio.
DR. PAUL REDARD, 2 Rue de Constantinople, PARIS, . France.
D. E. SALMON, D. V. S., WASHINGTON, . . District of Columbia.
THEODORE R. VARICK, M. D., JERSEY CITY, . New Jersey.

ADDRESS OF WELCOME AND REPORT OF THE COMMITTEE OF ARRANGEMENTS.

By CHARLES A. LEALE, M. D., of New York County, Chairman of the Committee.

September 27, 1887.

GENTLEMEN: In the name of the Council and Committee, I have the pleasure of extending to you a most hearty greeting. To-day we have present with us representatives from all portions of our state, who have left happy homes and anxious duties to unite with us for a few days for the purpose of contributing knowledge, and of gaining more wisdom, whereby we may increase our power for future usefulness. For the fourth time we have assembled in this city to make our yearly offering; therefore, during the entire session, let us diligently strive, without selfish object or desire, to promote our art, and endeavor to improve our power to conquer disease, to alleviate misery, and thereby, under the guidance of God, become humble instruments to increase the happiness of humanity.

The preliminary work of the Committee is done, and the steadily increasing growth and importance of the New York State Medical Association may be stated to be due to the fact that so many of our Fellows are anxious to do their utmost to extend our usefulness; but with the increase of prosperity greater obligations ensue, and we are constantly reminded that art is long and life is short. This session we have set apart one evening for the purpose of having pathological demonstrations, and cordially invite each to present a specimen at the meeting, with a concise written history, and, if agreeable, to give the same to the museum of the

New York State Medical Association. All contributions will be duly credited to the donors.

The printed programme of our proceedings for this year has been sent by mail to each of the Fellows of the Association, and by it you will see that there are fifty-two scientific contributions, coming from the five geographical districts, including nineteen counties of New York state, and from the District of Columbia and two sister states, in the following proportions:

The First District sends	. . . . .	1
Second "	. . . . .	6
Third "	. . . . .	9
Fourth "	. . . . .	13
Fifth "	. . . . .	20
District of Columbia sends	. . . . .	1
State of New Jersey "	. . . . .	1
State of Pennsylvania "	. . . .	1
		52

In these five districts, Fellows of the Association from nineteen counties contribute essays in the following proportions:

Second	District,	Albany	County,	1
Third	"	Broome	"	1
"	"	Chemung	"	3
"	"	Chenango	"	1
"	"	Cortland	"	1
Fifth	"	Dutchess	"	1
Fourth	"	Erie	"	8
First	"	Herkimer	"	1
Fifth	"	Kings	"	1
Fourth	"	Monroe	"	2
Second	"	Montgomery	"	1
Fifth	"	New York	"	16
Fourth	"	Niagara	"	2

Third	District,	Onondaga	County,	2
Second	"	Rensselaer	"	3
Fifth	"	Richmond	"	1
Second	"	Schenectady	"	1
Third	"	Tompkins	"	1
Second	"	Warren	"	1
Fourth	"	Wayne	"	1
				49

The contributions from the sister states are as follows:

District of Columbia,	1
State of New Jersey,	1
State of Pennsylvania,	1
	3

Total, 52.

The fifty-two contributions, classified in accordance with their subjects, are as follows:

24	are	on medicine.
14	"	surgery.
12	"	obstetrics and gynaecology.
2	"	forensic medicine.
52		

The morning sessions will be opened at nine o'clock, and will be devoted to the announcements to be made by the Secretary, to the usual business of the Association, to reports and addresses, to be followed by essays and their discussions. The afternoon sessions will begin at one o'clock, and will be entirely devoted to the presentation of essays, and their following discussions, as enumerated in the programme. The papers contributed since the printing of the official programme will be announced as occasion may arise.

PRESIDENT'S ANNUAL ADDRESS—LUPUS OF THE CERVIX UTERI, AND FEMALE GENITALIA.

By Isaac E. Taylor, M. D., of New York County.

September 27, 1887.

Fellows of the New York State Medical Association:

Your suffrages have elevated me to the distinguished position of presiding over your deliberations on the present occasion. The high estimate of the honor you have conferred on me impresses me with a deep sense of responsibility, and that you are under to do your utmost to strengthen the honorable position we have obtained for our Association.

My first duty, and a very pleasant one it is, is to thank you, on taking the chair, most sincerely for this esteemed compliment and honor. When I first learned that my name had been presented to the Committee on Nominations, I frankly confess I was taken with surprise, as I should not have entertained such a thought. I felt constrained from my want of competency for such a position, as I was less familiar with the methods of procedure than some of our more eminent Fellows who had enlisted their energies and given their time for this object, and who might justly have looked forward to the honor of presiding over so large a body of scientific and learned medical men. The honor is enhanced by the exceptionally elevated status you have imparted to this Association. My objections were overruled, and I could not hesitate to acquiesce in the wish of the Association which was so kindly tendered.

The admirable manner in which you have been presided

over since our formation renders it difficult for me to approach the standard of excellence, though I will endeavor to fulfil it. It is not, gentlemen, your Presidents, as I conceive, nor your Council, that have made this Association what it is. It is through each Fellow, who, by bringing his facts and his opinions before you, gives to your Association the importance it is destined to reach. I am confident from the prestige it has attained thus far that it will "lengthen its cords and strengthen its stakes."

The medical profession is one and continuous. The only excuse for its division is, that its field is too vast and entire for individual exertions to cultivate it up to the perfection demanded by modern discoveries and observations. Each branch of the profession is very closely identified with the others, and serious loss is suffered without this alliance existing between them. Let us then, as true workers, earnestly strive to gather on our part whatever is useful and valuable from every field appertaining to our profession.

It is with feelings of gratification and pride that I look back upon the year that is past, for it has been a year of increasing success for our Association. I must confess to you it seemed to me an impossibility to have contemplated such a success from the beginning, and to you I tender in the name of the founders my warmest thanks for the active and hearty support which you have extended to it. In the short period of our existence it is backed up with an array of names which have scarcely been equalled. This is no simple boast or flattery on my part.

A short resumé of the success and prospects of this scientific body may not be irrelevant or unacceptable. In 1884 the original number was 514. In 1887 it has reached to 667. This is deducting the six deaths which have occurred during the year. From this increase of 143 of new members in three years there is therefore reason for gratification. The success was considered a matter of certainty *ab initio*, demonstrating a pledge for unanimity of purpose and action in our profession.

The Library must claim a passing notice. It has grown considerably, and is now too valuable not to invite attention. I respectfully call your minds to its great advancement. There are now over 4,600 volumes. It is becoming more and more enlarged. This is a splendid effort and grand beginning for so short a time as two years. If I speak in a laudatory spirit, you will excuse me. Too much encomium could not be bestowed on our highly esteemed Fellow, Dr. E. S. F. Arnold, for his diligent, faithful, and persevering energy and hard work in arranging the whole of it. It is a masterpiece of laborious effort of this nature. The sight of it will gratify the eye and merit commendation. Go and look at it, Fellows, and I think you will testify to the truthfulness of the evidence presented. The Library is for circulation, and has no special relation, but it is for all of us.

You have been presented this year with Vol. III of the Transactions much earlier than ever before. One of the prominent points of these Transactions, differing from the publications of other societies, is the special introduction of some surgical, medical, or obstetrical subjects, and the discussions on the questions propounded by the authors of the papers. You will coincide with me that we have proof from this source of the existence of an amount of energy, a range of inquiry, and extensive work which give evidence of a progressive advance. This ends the business part of my duty, and I pass to another of an entirely different aspect and nature.

I am not to forget a word or two relating to our departed colleagues. The dark portal of death has closed upon them. Their presence is withdrawn from us. Their work and their memories remain. These survive as a part of the great and enduring life of our Association. With this loss, nevertheless I opine that we will have an excellent reserve force to fill up the lines of those who have succumbed in the contest of life, and thus the continual requirements of our Association will be secured. Permit me now to advance to the subject-matter of my address.

I bear in remembrance that the statute of limitations as to time, as well as your own desire to reach the regular order of the business of the Association, invites me to an abbreviation of the remarks I propose tendering to you on Lupus of the Cervix Uteri, and the Genitalia of Women. I trust, in presenting the subject I have in view, that you will not be disappointed, and that it will impart some slight information and knowledge toward an acquaintance with a disease which is of every-day occurrence on the face, and which all of you have cognisance of in some of the varied forms which exist. It is very rarely recognised in the genitalia of women, and it is exceedingly rare when invading the uterus cervix, or body.

CASE I.

History.—I accompanied Mr. H., August 21st, 1885, to see his wife, consequent on a rather free uterine haemorrhage she had a few days before, and which required the attendance of a medical gentleman. It was the *first* and *only* flooding Mrs. H. had, and it was the *last*. She presented an anaemic appearance. In person rather fleshy, appetite good, and slept well. She had experienced no pain before the occurrence of the haemorrhage. It commenced suddenly. All the functions of the system were natural and well performed.

She married in early life, at the age of 17. Her confinements were quick and easy. Her recoveries were always favorable. She nursed all her children, and had six. All of her children had excellent health and good constitution, showing no constitutional taint of tuberculosis, externally or internally, in this respect resembling their parents. The grandchildren are perfectly healthy.

There was no history of cancerous disease of the uterus or elsewhere in Mrs. H.'s family.

Mr. H. died suddenly at the age of 73, from cardiac disease.

Vaginal examination. The uterus was found movable, presenting no hardness, no tenderness, no irritability. A soft feel was given to the touch on the cervix. No trace of blood from the examination. The vagina was much longer than ordinary, and natural to the feel. Its length was fully 3½ to 4 inches. The uterus was elevated, and could be felt externally above the pubes very distinctly.

The pudenda and vulva natural in appearance, though fleshy. The surface of the diseased part was a light pink color, elevated, uneven, and not uniform, with intervening spaces, covering the anterior and posterior part of the left side of the cervix. The edges were of a brighter color.

When the cotton wool was brushed over it, a slight reddish discharge followed. The discharge from the diseased part was trifling, and of a light watery yellowish red color There was no odor from the discharge. Dilute nitric acid was applied. Internally, Mur. Tinct. Ferri three times a day. Long narrow tampons of cotton wool were prepared to be used should flooding occur.

August 25, 1885. No haemorrhage; patient looking brighter and better; anaemic condition improved; very little discharge from the uterus, and of the same character, soiling only three or four napkins a day; bowels regular; appetite better; slept well; and had no pain.

A speculum examination was made with a large Fergusson instrument, having a bright sun-light. The cervix was brought clearly and distinctly into view. A slight oozing was seen from the ulceration. The ulceration covered half of the anterior and posterior part of the cervix on the left side, extending up to the fornix. The appearance would be properly termed tesselated, or pavement like. The drawing is a true copy (Plate 1).

Diagnosis.—Lupus Serpiginosus, or Tuberosus, of the cervix uteri.

The patient was visited every four days. Treatment continued till her return to the city, October 17th.

October 17th. Improved very much in every respect; discharge the same; no pain, and no odor. The ferruginous preparations were changed, and Donovan's Liquor and Fowler's Solution of Arsenic substituted, which were given alternately every month. During the winter, several of the more active escharotics were tried, such as pure nitric acid, chromic, lactic, and per nitrate of mercury. Every time these strong remedies were used they appeared to aggravate the disease. Curetting was not adopted for reasons which will be offered elsewhere. The dilute nitric acid was resumed January 4, 1886. This remedy was continued with the same internal ones till March 5, when the disease appeared to be improving. The posterior lip of the cervix showed signs of healing over. General health very much improved.

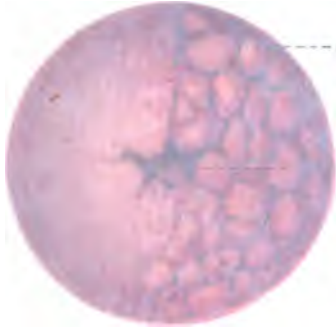
March 1st. Little if any discharge; nearly all the diseased surface healed over. During all this period of time—five months—there had been no pain, and no odor from the discharge. The patient had gained in flesh, was stronger, and so much encouraged as to intimate that there might be no need for further medical attendance.

June 1, 1886. Returned to the country. Visited every week, continuing to mend. She visited her family, drove out, and was bright, cheerful, and encouraged. The cervix almost all healed over.

Saw her but once during the month of July. *In statu quo.*

August 2d. For the first time complained of frequency of urination. On examination, the aspect of the pudenda, clitoris, and urethra appeared larger than natural, the meatus presenting a white, dull color, and firm, as well as the urethra; labia majora and minora increased in size, in

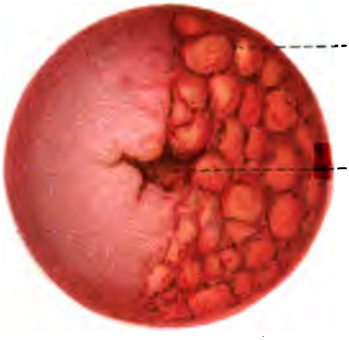
Papilloma Serpiginosis of Cervix Uteri.



August 25, 1885. *From Nature.—H. L. Shively*

Lindner, Eddy & Clauss, Lith., N. Y.

Lupus Serpiginosis of Cervix Uteri.



Mrs. H's Case, August 25, 1885.

From Nature.—H. L. Shively.

Lindner, Eddy & Clauss, Lith., N. Y.

length, and in breadth,—the right more than the left,—3½ inches long and 1½ inches in breadth, and firm to the feel; the vagina not so dilatable; three small circular elevations on the superior part of the vagina, near each other; uterus movable, though it seemed to be larger; increase of discharge, and the ulceration commencing anew its destructive process; no pain and no odor; patient feeling very well; treatment the same; usual diet and Mariani wine ordered.

October 5th. Returned to the city. Since my last visit—September 7th—the patient had a malarious attack, which continued for ten days, materially affecting her. She had evidently become more enfeebled and depressed, and was not entirely relieved of it till November 2d.

From October 5th to October 25th—three weeks—she was too feeble to permit any examination. Only two were made between November 2d and 28th.

November 28th, 1886. The disease on the cervix had not progressed, although it had again commenced on the posterior lip, and had extended farther, presenting as originally the same elevated pavement-like appearance, divided into small oval and round spaces; discharge, no change; and no pain.

During this interval of time—nearly two months—the right labia had increased in length and breadth; clitoris longer, larger, and broader; vagina decidedly more contracted; the discharge same in quantity and color, no odor; bladder more irritable; appetite good; bowels regular; and slept well.

Rectal examination. Uterus in the same elevated position, and movable.

December 1st, 1886. Owing to the great increase and enlargement of the pudenda, vulva, and clitoris, the patient was not able to sit up, and she remained in bed.

January 1st, 1887. From November 2d the disease had been pursuing a more active and progressive course. New features, externally, of the most formidable character of the disease arose, assuming the hypertrophic form as well as the tuberculous or nodose. On the lower part of the right labia several small elevations, from the size of a pin's head to that of a pea, were recognised, and two or three were larger, assuming an oval shape.

January 6th, 1887. The measurement of the labia majora was 5¾ inches in length, 4¾ in breadth, and a further evolution of tubercles on the right labia and a few more on the left.

A few days before, the clitoris, which was very large, had increased, and small pea-like elevations were distinctly evident.

Previously, the clitoris presented a smooth shining surface, firm to the feel, and thickened. From this smooth glossy surface a slight watery discharge was oozing, and when this was wiped off the part would again

weep. The appearance of the clitoris at this stage of the disease resembled the oozing tumor. The measurement was 1¾ inches in length and 1½ inches in breadth. No examination. Patient appeared very well.

At this visit my friend, Dr. J. W. S. Gouley, was present. A drawing was taken (see Plate 2). The drawing exhibits a true representation of the pudenda and clitoris.

The tubercles on the labia and clitoris had increased, and some tubercles had also evolved on the right groin.

Uterus movable; no increase since the last examination; no induration surrounding the uterus; several more circular and oval patches recognised through the speculum, although a much smaller one was used; the vagina losing its expansibility.

January 17th. Labia majora increased to 6½ inches in length, breadth 5 inches; clitoris much larger; ostium vaginae more contracted.

January 21st. My friend, Dr. C. A. Leale, who had been requested to attend Mrs. H. in case of any emergency which might possibly arise, was present at this visit. Patient the same as at previous visits in all relations.

January 27th. A clipping from one of the nodules was taken. The tubercles had increased in number, very much larger, more elevated, and of different shapes; labia not increased. The specimen was given to Dr. Hermann M. Biggs, Instructor in the Carnegie Laboratory, for investigation. No application could be made to the cervix. The vagina was washed out with tepid water, and the dilute nitric acid injected. This was continued on every visit, though the solution was made much weaker. It was simply for cleanliness.

February 17th. No change, except in the clitoris, which was becoming larger in every way, and nodose.

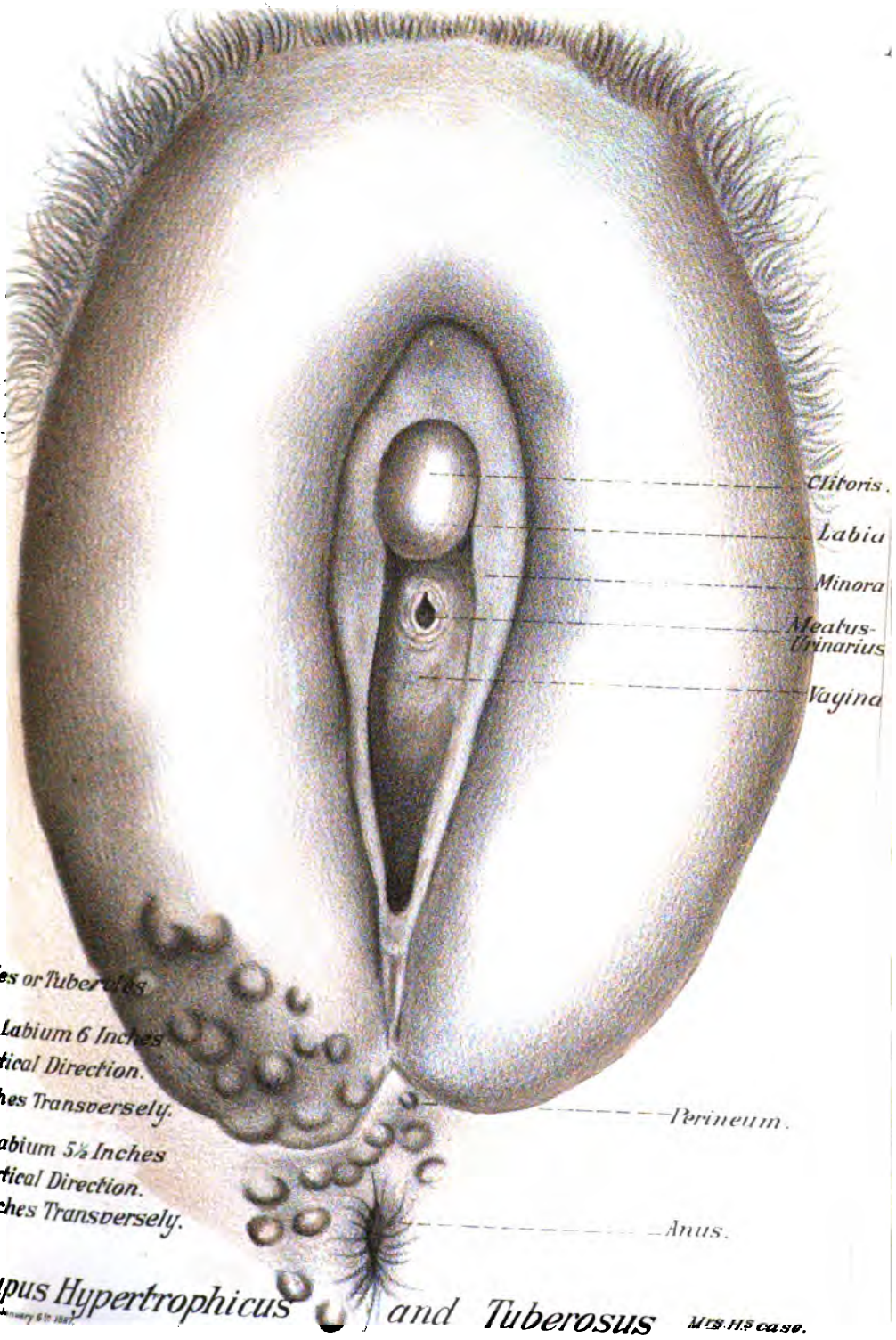
February 24th. Labia majora the same in size, 6½ inches long and 4¾ in breadth; clitoris larger, 2 inches in length, perfectly tesselated in appearance; patient becoming more feeble; evident signs of emaciation; pulse 100; sickness of stomach; tendency to diarrhoea.

March 1st. Failing; pulse feeble and small; in a semi-unconscious state; diarrhoea moderated; takes little nourishment.

At this visit, on inspection of the pudenda, there was a marked shrinkage in the breadth and length, as also of the clitoris. There was a very distinct diminution of the tubercles and labia, when contrasted with the representation January 6th, 1887. The cast gives evidence of the great change (Plate 3).

March 4th. In Articulo Mortis. Died March 6th.

This exceedingly unique and rare illustration of Lupus Serpiginosus, commencing on the cervix uteri, presenting the same characteristic features as the same order on the


Clitoris.
Labia
Minora
Meatus-Urinarius
Vagina
Nodules or Tubercles
Right Labium 6 Inches in Vertical Direction.
Inches Transversely.
Left Labium 5½ Inches in Vertical Direction.
¾ Inches Transversely.
Perineum.
Anus.
Lupus Hypertrophicus and Tuberosus
Mrs. H.s case.
H.L.Shively Del.

genitalia of women, and afterwards the hypertrophic form developing on the pudenda and vulva, clitoris and urethra, corroborated the opinion which was entertained and expressed August 21, 1885, that the disease was one of the numerous forms of lupus, as described by dermatologists under different synonyms. I preferred the title Lupus, as the one most generally in vogue at the present day. Although the word "lupus," or "wolf-cancer," the ancient title, may not be considered as the most desirable in all its aspects, still it fulfils more than others the peculiar requirements incident to the nature of the disease, which may be viewed as a *sui generis* disease in almost every respect.

Different authors have included under such titles diseases which have no pathological relation to the affection from the commencement to the termination of the malady. Huguier selected the title, Herpes Esthiomène, simply because it gave prominence to one of its significant features, the tendency not only to destroy the tissues which were affected, but to reinvade a part which had healed over.

Noli me Tangere is another ancient title, which was applied, and still is, to the disease, because whatever local remedies were used, they were considered of no, or very little, value. The disease would progress at will to an unfavorable issue. The face is most generally the usual habitat, though occasionally it is seen on the extremities. All of you, I presume, have evidence of this disease in that locality, whether it is developed on the cuticular surface, or involving the mucous membrane of the mouth or throat, or the nasal orifices. The tissues of the face which are affected are, it is true, different in structure from those on the genitalia of women, and from the uterus, in a physiological and anatomical aspect; still there is a close alliance and affinity between them.

It is immaterial, however, by what title we may elect to call the disease. From the distinct and peculiar action and nature of the destructive elements which it possesses, it proceeds steadily to advance, and accomplishes the death of the

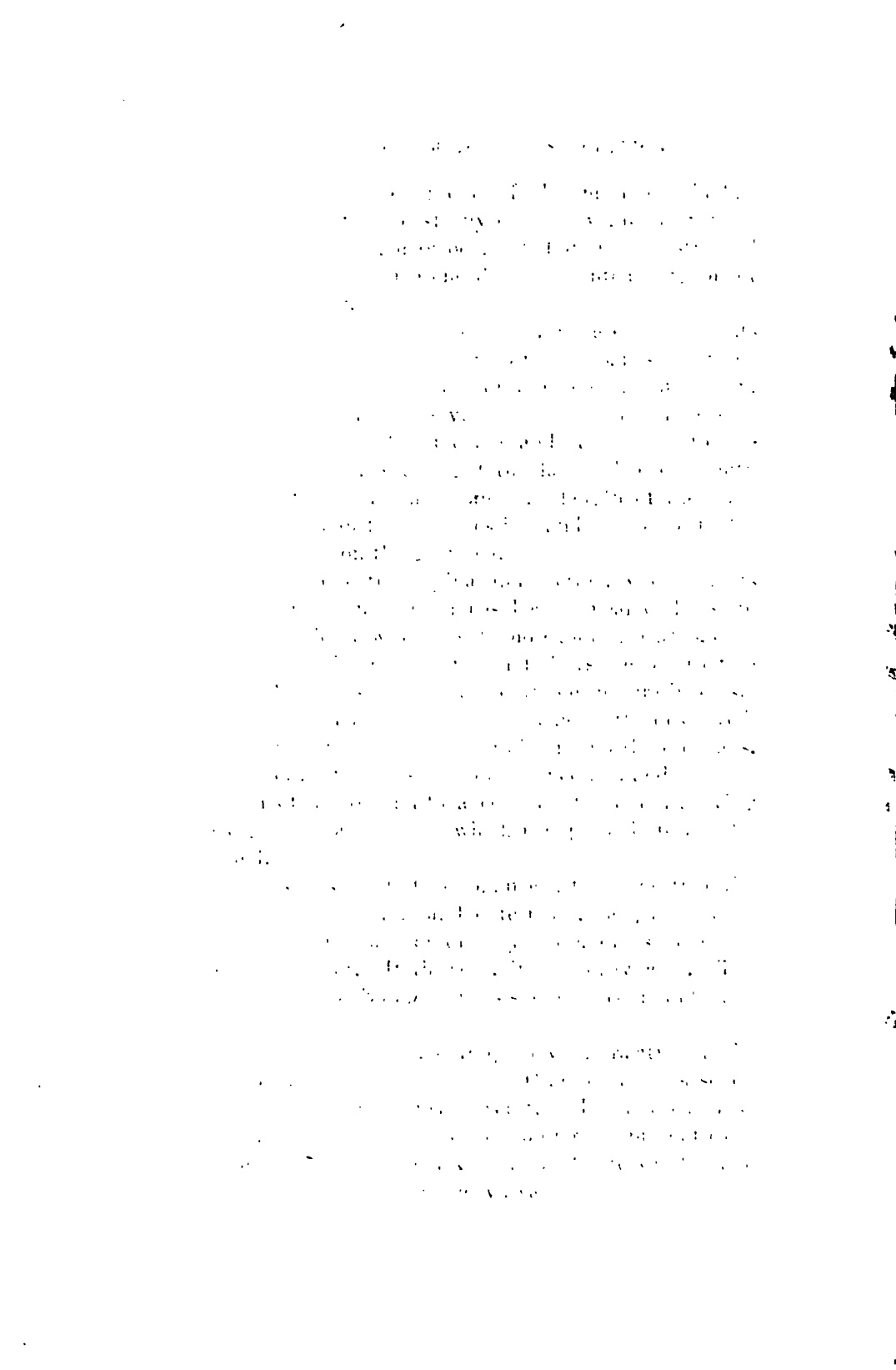
individual. The disease is one of the most formidable, stealthy, persistent, though slowly destructive, in its nature, and no matter where it may be located it will outstrip all the skill of the most experienced and talented surgeon or physician eventually.

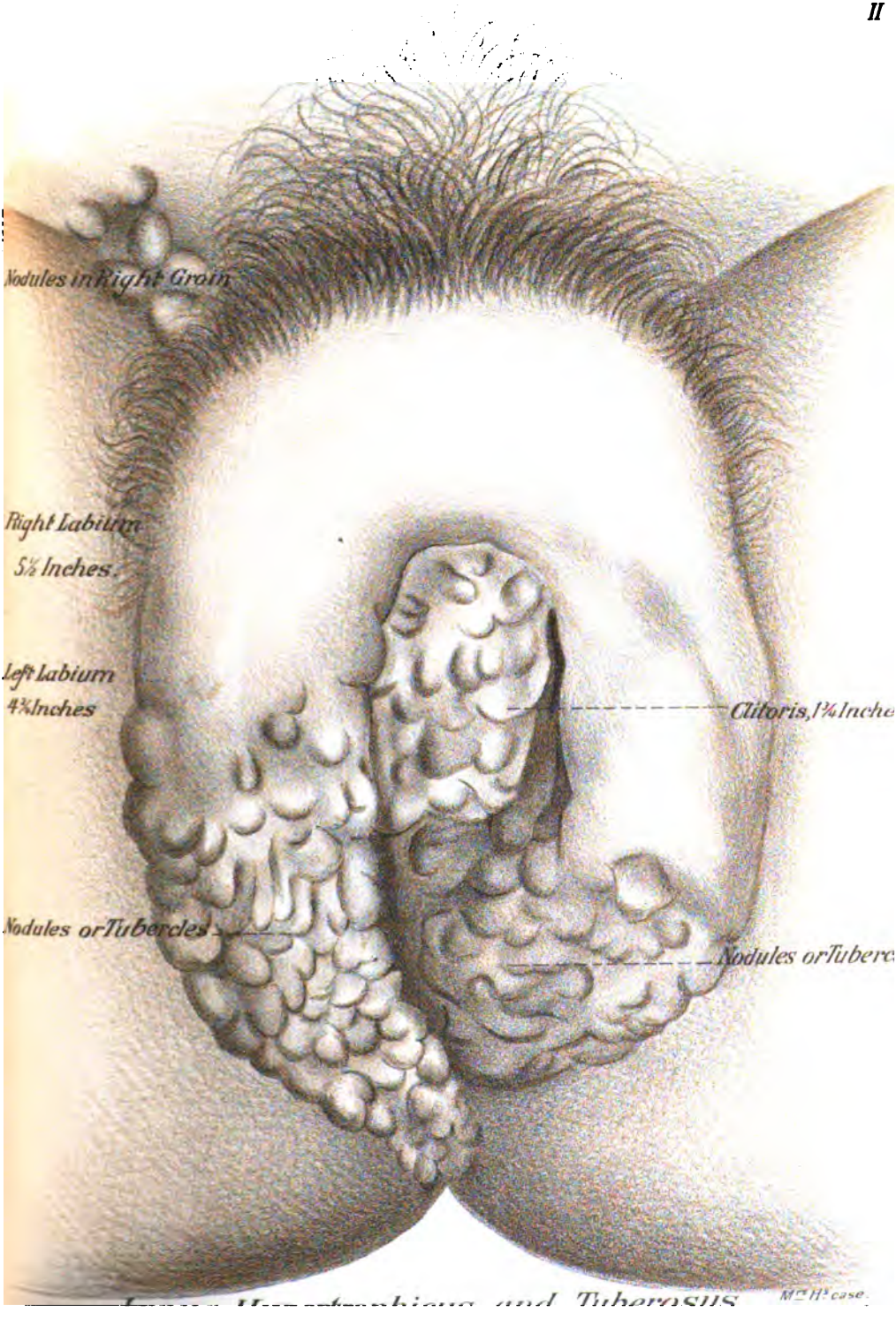
Cases of recovery are recorded, and I have evidence of its being cured; and they may remain so for years, possibly to be again renewed. The occurrence on the genitalia of women, where the destruction of the vulvo-anal region is involved, is, I think, far more disagreeable and disgusting to the patient than when it has engaged the face. The deformity consequent on the enlargement and the length of the labia majora is in many instances excessive, and is one of its distinguished features on the genitalia.

The contraction of the vagina and rectum, which results sometimes after the ulceration has healed, nearly closes up these outlets by dense white, hard, and callous growths, or it may be from the cicatrisation which follows the destructive ulceration. A¼ times the relation which naturally exists between the vagina and the rectum is perfectly destroyed, presenting a large chasm extending all around these outlets, freeing the rectum from its natural connection, and causing an extrusion of the rectum to a considerable extent, giving to these organs an appearance which is deplorable to behold. (See Plate 4.)

With all this mass of destruction, it is astonishing that, the disease going on internally and externally, the patient does not complain of any pain, or of very little, and seldom has there been any odor. If there is, it is faintly acid. The disease will go on *ad libitum* with its silent invasion and excavating process.

Frequency. Respecting its frequency or rarity on the pudenda, vulva, vagina, and uterus, Huguier reports seven cases on the pudenda and vulva; West, of London, had also seven cases; my own eight cases, including the present case, occurring *ab initio* on the cervix uteri, and afterwards manifesting itself on the pudenda and vulva.





Hypertrophicus and Tuberosus

On the contrary, Vidal says that in about 150 women affected with lupus vulgare, not one had the disease on the genitalia.

Kaposi had seen 1,200 cases of lupus vulgare, and in women as often as in men, but he had not once seen lupus of the nates and thighs extend to the labia. He had seen only one case on the penis. It is evident that there is a great discrepancy in the experience of medical men as to the frequency of the disease on the genitalia of women. It would seem to infer either an erroneous diagnosis on the part of the gynaecologists, or the non-presentation of these forms of the disease to other practitioners, and more especially to the dermatologists. Are the representations I present to you, so graphically drawn from nature, lupus? (See Plates 5, 6, etc.)

P. C. Huguier, of Paris, was the first, as a gynaecologist, to give emphasis to this disease occurring on the genitalia of women to the medical profession, in a memoir read before the National Academy of Medicine, February 8, 1848.

While attending physician to three large medical institutions at the same time, one of these being the New York City Dispensary, whose *clientèle* at that time, 1839, was very extensive, the class of diseases belonging to my department were diseases of females, and the non-syphilitic as well as syphilitic diseases of the skin. The service in those institutions claimed my attendance from 1839 to 1848, and since then the Bellevue and Charity hospitals for over twenty-five years. During that period of time, 1839 to 1848, nearly nine years, not a single case of lupus on the genitalia, in any of its various forms, was observed, as recognised since in the Bellevue and Charity hospitals and private practice. A number of serpiginous forms of syphilitic disease, with considerable enlargement of the labia, came under observation. The patients gave the history of, and had, constitutional taint. The appearance of this class of syphilitic disease sometimes closely resembles lupus.

In 1882 I presented a paper on some of the forms of lupus on the pudenda and vulva before the American Gynaecological

Society. Graphic illustrations were produced from nature by Mr. Köhler, an experienced anatomical artist, and I now present them to you with a cast of Mrs. H.'s case, originating on the uterus. These representations embrace the serpiginous, the deeply ulcerated, the hypertrophic, and prominens, a form of tumor of the raspberry or strawberry appearance.

Matthews Duncan, in 1885, read two papers before the Obstetrical Society of London, one considering the hypertrophic and the other the ulcerative order of lupus, which he called lupus. The representations of several cases were chromo-lithographs. They present an entirely different appearance from those of which I have representations.

Several of the speakers—and among the principal ones was Mr. Jonathan Hutchinson—dissented from the opinion of Duncan, as well as the drawings, which were considered as representing syphilitic lupus. This view was coincided in by nearly all the speakers, except one who thought they were elephantiasis arabum. Others thought they were tertiary syphilis. In other words, it was either lupus grafted on a syphilitic constitution, or a constitutional syphilitic disease, with lupus intercurrent. I shall refer to this special point hereafter.

Mr. Thin, one of the most eminent and prominent microscopists in London, said that from his microscopical investigations they did not present the true development pathologically of lupus vulgare. He considered them to have a fibrous exudation, and that there was no evidence of cancer, epithelioma, or corroding ulcer, and that he should regard them as a disease *sui generis*.

It is only within a quarter of a century that an apparent approach to what might be conceded as a more correct opinion respecting the pathological nature of the disease has been entertained, though the most distinguished dermatologists and pathologists have given the results of their minute and careful attention, practically, as also microscopically, and it remains, *sub judice*, for farther investigation to ascertain if

the disease has a specific bacillus belonging to it. The pathological disagreement, as also the difference respecting the title, the frequency, the cause, and the treatment, prevails as much at the present day as in past centuries.

The medical profession have established it as a cutaneous disease. The face is recognised as the most usual and frequent seat of the disease. We have positive evidence that it selects at times the delicate and soft structures of the uterus, pudenda, and the vulva-anal region, where various and distinct classes of the glandular system exist.

The difference in the nature of the disease may not appear as distinct as on the structure of the face and body. Similar relations we realise, however, prevail between the skin and the mucous membranes, and when the former is affected, papules which exist about the mouth externally will assume the character of aphthae or of vesicles when invading the mucous membrane.

Squamous diseases have sometimes attacked the mucous membrane, but instead of scabs and crusts we have only excoriations. In my own cases and those of the authors I have cited, the disease on the genitalia was not found as on the face, with scabs and crusts of the mucous membrane covering the cartilages or osseous structures of the nose, which constitute one of the characteristic features in many instances on the face. This may be accounted for, as the discharge emanates from a mucous membrane having different kinds of glands, which exist on the pudenda and vulva, the vagina and uterus, and the non-exposure of these parts to the atmosphere.

Pathology. Considering the results of the latest microscopical investigations, lupus is a series of affections consequent on a specific outgrowth of the cutis alone.

O. Weber, Berger, and others believed that it was a hyperplasia of the rete malpighii with small round cells.

Huguier refers to Robin's and Lebert's results, who locate the disease in the same structures of the cutis. The cells were elliptical, and had all the characters of epidermic cells,

each one being polygonal in form and more or less regular, but having a nucleolus.

Paget says that "The material scraped from the upper surface was formed of small epitheliform scales of various shapes, with nucleoli, and all were small and round." This examination was from a specimen of one of West's cases.

Wedl, of Vienna, differs from all these authorities, not only as to the seat of the disease, but as to its character and nature. He considers that a new formation of the connective tissue exists, and that the disease has its locality in the corium.

Auspitz and Kaposi coincide with the views of Wedl, as well as Klebs and Virchow. The small nodule or tubercle, when first recognised, is made up of small cells differing from the cells of the rete malpighii. The cells are sometimes elliptical, with short processes inclosing a round or oval nucleus with nucleoli. At times these cells equal in size those of a well marked fungus medullaris cell, and are more usually found in the soft raspberry-looking tumor of the prominent form.

My friend, Prof. J. W. S. Arnold, in a specimen taken from one of these tumors, recognised the giant cells. They were large, ovular, circular, irregular, and well defined. In the cases of lupus prominens, cell-heaps were recognised. These cell-heaps have been considered as peculiar to lupus. Giant cells, however, are found in scrofula, hyperplasia, syphilis, and tuberculosis. A small portion, which was easily removed from the cervix uteri, as well as a clipping from one of the tubercles on the right labia, in Mrs. H.'s case, was examined by Dr. Hermann M. Biggs, instructor in the Carnegie laboratory, and thus described to me:

There was a moderate amount of hyperplasia of the malpighian layer of the skin, with at some points slight cellular prolongations of the interpapillary promontories. The superficial layers of the corium contained here and there small collections of round cells, and a little deeper down were numerous irregularly outlined spaces in which lay loosely dense packed masses of epithelial cells. The tissue surrounding these spaces presented a very densely nucleated fibrous structure.

In some of these the masses of cells which formed the contents were

so loosely placed that they had fallen out in the process of preparation. (See Drawing XX.)

The histological appearances were not unlike those sometimes found in recent secondary carcinomatous deposits in the skin. (Plate 11.)

Reference to the investigations of such prominent microscopists and pathologists tends to show a material difference of opinion on these two essential points as to the nature of the disease.

Paget's and Biggs's observations go to show that possibly a carcinomatous element may prevail.

Wilson and Plumbe, of London, Lugol, Lulois, Doutrelpont, Koch, and others, of France, regard lupus as a tuberculosis of the skin, classed under the scrofulides.

Swimmer, of Buda Pesth, at a late meeting of the Berlin Congress, stated that the affection of the skin known as tuberculosis was a very rare one, while lupus occurred frequently.

Kaposi says that no clear conception of what is meant by tuberculosis or scrofula can be entertained, and he knows of no case of the disease in which scrofula was present at an early stage.

In none of my cases, nor in Huguier's, was there any external or internal evidence of a local or constitutional tuberculous disease. The manner of death in those who have died from the disease had no relation to tubercular affections in any way. I have no desire to ignore the fact, which is evident from the constitution in which scrofula or cancer or syphilis may exist, that there are no circumstances which would or would not predispose to their development, and be favorable to the production of the disease. The remarks of Swimmer and Kaposi corroborate what I have previously stated, that it is a well established fact that the generality of persons with tuberculosis or scrofulous disease, who are not constitutionally affected, seldom suffer or have lupus. On the contrary, the constitution is seldom undermined or broken down as in tuberculosis, but it continues in its integrity for months and years. Sometimes the

patient gains flesh, as Mrs. H. did at one time, and another patient under my care who weighed over 200 pounds.

Leloir, in 1882, commenced the inoculation of lupus material. In one half of his experiments positive results were, he says, obtained, in which a generalised tuberculosis occurred, and the tubercles were found to contain bacilli.

Twenty years previous to Leloir, in 1862, while practising syphilisation in the Charity and Bellevue hospitals, several essays were made to inoculate other patients. The result was *nil*. Possibly my method was not the same as Leloir's, though it was tried now and then for several months.

Koch has recently, it is reported, demonstrated the bacillus tuberculosis four times in small numbers before he could be certain of it. He examined at one time twenty-seven sections, and at another forty-three sections, before finding a single bacillus. He says he never saw more than a single bacillus in a giant cell. Koch has obtained cultures of the bacillus from blood stroma after the inoculation with material from a specimen of hypertrophic lupus. There is no mention, however, whether any of these patients of Koch whom he inoculated had tuberculosis.

Demme and Pfeiffer had found it constantly.

Mélassez, of France, looked in vain for it in several cases. Cornil and Babes, having examined several sections from each patient, found only one. I have not read of a case recorded as yet where, in a typical case of lupus without a constitutional taint, a bacillus was found. All the cases thus far recorded were in a tuberculous constitution, or associated with local diseases. We cannot doubt that lupus may be grafted or occur in scrofulous, syphilitic, or cancerous constitutions.

Instances have been recognised where syphilis has been cured, and lupus has afterwards declared itself, and gone on for years, and the constitutional disease has not presented itself again.

The original syphilitic taint may predispose to the formation of lupus, consequent on an impaired constitution, but it

does not therefore impress on it the evidence which would demonstrate it to be of a secondary syphilitic nature. This may have been the case with Duncan's patients and others, but he says they did not give evidence historically of syphilis. Winternitz asserts that no case of the development of cancer out of lupus has ever been reported. Certainly none of the females I attended with lupus of the vulva had communicated the disease to their husbands, and this is the opinion of Huguier.

To what, then, does lupus owe the great destructive features which belong to it? Is it to the size and shape of the cells? We have seen that they are so various that from that circumstance alone they may have no special pathological peculiarity or significance as other tissues have. The want of a corresponding agreement respecting the bacillus tuberculosis is as divergent among the pathological investigators as the microscopical.

Has it been shown or proved at the present day that lupus has its own significant bacillus, as truly diagnostic of the disease as the bacillus tuberculosis in tuberculosis? Can it be asserted with verification that when the bacillus is recognised from a specimen of true uncomplicated lupus, because the tuberculosis bacillus is found, therefore lupus should be considered as a scrofulide? Could it be asserted also, that when lupus is seen in a syphilitic or cancerous patient, and a bacillus tuberculosis is discovered, therefore the disease is a scrofulide?

No disease has presented more difficulty of solution as to its true pathological nature, despite all the minute investigations in different ways to recognise the peculiar elements of destruction appertaining to it.

It has been asserted also by able and prominent dermatologists that there is no histological appearance that we can with propriety regard as significant of the disease. No! It stands at this day as a disease from its inception, and through all its different phases to its termination, as a disease *sui generis*.

In a clinical aspect, therefore, we have from this standpoint to look beyond the results of microscopical appearance, whether a bacillus exists or not, to the knowledge we possess respecting the cells, to whatever order or class they may belong, as the great destructive factors or agents; to their activity, persistency, stability, intractability, if not malignancy, in keeping alive the disease; and beyond this at the present time we have not gone. Commencing simply in appearance, as the disorder does, as a small nodule, and progressing stealthily outward and inward, performing in this way a dual office, we perceive the devastation going on for months and years,—the disease healing up at times, and supposed to be cured, but again renewing its former action of destruction. It is no matter what part of the genitalia it may elect as its seat: as long as these cells exist they will travel, and keep on their monotonous and subtile course as a disturbing element to the constitution till nature succumbs.

Lupus is credited with an alliance to some class of uterine disease, and more especially to corroding ulcer, epithelioma, sarcoma of the mucous membrane of the cervix, and tuberculosis.

Corroding ulcer is certainly an unusual form of disease of the uterus to meet with.

As far as some symptoms are concerned, an approach to an alliance may be entertained,—the duration of the disease, the mobility of the uterus, and its freedom from fixation to the surrounding structures, the pain not being so intense as in other uterine diseases. Commencing, as the disease does, on the cervix, yet in its nature and course there appears to to be very little or no similitude. The destructive process plays an entirely different part. In time the disease gradually makes its way to the structure of the cervix itself, and reaches the cavity of the body, excavating this, in fact shelling out the whole of the interior of the body, and leaving only a small part of the muscular structure of the uterus.

The discharge from the deep ulceration is sometimes considerable, and of an exceedingly foetid odor. Haemorrhages

are not infrequent. The pain is compared to a burning-coal-like sensation. Death is most generally through a gradual wearing out of the physical constitution. Two cases of this affection have come under my observation; and I present to you a drawing of one of these cases in an early stage, as a contrast to the one of lupus. One post mortem specimen was presented to the Pathological Society. With some of the prominent German physicians this disease has no identity.

Epithelioma has been referred to as having an alliance with lupus. Epithelioma is very frequent, commencing as it does also on the mucous membrane of the cervix in a superficial manner at first, slowly and gradually invading the whole cervix, destroying section after section, and propagating its deep destructive action to the surrounding tissues, amalgamating nearly all of them in one solid mass of cohesion and hardness. Haemorrhage is a frequent and prominent symptom, and sometimes a profuse serous discharge. The odor is especially significant. Pain becomes excessive, and continues with but few remissions in aggravated instances. There is but little respite for sleep; excessive emaciation, and the disease will seldom continue over two years.

Tuberculous disease of the uterus has been added to the list. This is an exceedingly rare disease of the uterus, and is principally confined to the body in its selection. The cervix may become similarly affected, and when it does the cervix becomes enlarged in consequence of the small nodules or tubercles. These tubercles are larger and more prominent, and distinguishable from the lupus nodule, which is flat and of different form. Those of tuberculosis are soft, consequent on the infiltration which they undergo, and they give issue to a small quantity of thickish matter resembling pus. Eventually a rapid destruction ensues, and the patient dies through symptoms of constitutional disease incident to tuberculosis. The pus which is secreted from the serpiginous or ulcerated form of lupus is of a different nature and character, and is not regarded as a product of the breaking up of

the newly organised substances, or of the normal elements of the tissues.

The pus which comes from the diseased surface of lupus, though small in quantity, is from a new formation out of, or from, a blastema. In most other diseases the morbific action affects only one tissue in particular, and it is more or less confined by its own specific action to such tissue. This does not hold in lupus. Its ravages have no respect to continuity of organisation. Having once destroyed the seat of its original development, it continues to nibble, mouse-like, its way through every tissue which appears in its progress, until its farther course is limited either by the destruction of the organ or by artificial means—an end which may be, and sometimes is, attained. No corresponding relation exists between the duration of the malady, or the destruction which it produces. No open ulceration took place in the nodules on the labia in Mrs. H.'s case, possibly because the time was short, only five months from the commencing evolution until death. The nodules commenced with a small elevation, increasing to the size of a pin-head, becoming larger, and by degrees reaching, some of them, to the size of a three-cent piece, assuming different shapes, round, elliptical, or oval, according to the pressure consequent on juxtaposition. The two drawings presented of Mrs. H.'s case show the evolution of the tubercles, and the plaster of Paris cast which I presented to you exhibits it perfectly.

The long duration of the disease, as a general rule, though in some cases it may be a short time, rests in some measure on the nature and class of the disease and the constitution of the individual. The fact of its being cured at times, and not returning till after many years, and not proving fatal till after an interval of years unless some intercurrent disease supervenes, and not, as cancer does, in one or two years,—these are also some of its distinguishing features, clinically, beside those referred to. Where, may I ask, are the examples of ulcerating cancer being cured and relieved by treatment, as some of these cases have been? or where will we find

cases of true cancer of the uterus or pudenda healed up for a while and renewed again? Where do you find the glandular system, after years have elapsed, take on a deep ulceration, or tuberculosis cured and manifesting itself again, divested of any constitutional affection?

From this essay of a rapid delineation of the diseases of the uterus referred to, there seems to be no direct alliance with them of lupus on the genitalia of women, from a clinical aspect or from microscopical investigations. Microscopic recognition, in connection with all that has been accomplished for a more correct and true interpretation of the disease, is certainly desirable, and the future may develop it. At the present time, however, we have to rest, clinically, on the pathological element, as we believe, of the *cells*, their great activity, ability, and persistency, and the diseased blood-vessels which sustain them, and to endeavor to divert them from their malignancy, when under treatment, as far as we can.

The treatment I refer to confines itself principally to the disease on the genitalia of women, for it is mainly and solely to the disease invading these organs that I have addressed myself. It is principally local, becoming sometimes surgical, depending entirely on the special character of the form to be treated.

Should the opinion be entertained that a constitutional element exists, those internal remedies which are generally approved of to modify that special condition are to be selected. Should the disease present the tumor-like or raspberry form, or the hypertrophic order on the labia become excessive, or long, white, hard excrescences arise, they can be removed.

The exsection may be either by the écraseur, crushing scissors, or galvanic cautery, and afterwards brushed over with the brown-heated cautery. The potential cautery it is not desirable to resort to, efficient as it may be, and justifiable. This will depend, however, on circumstances as to the nature of the case and locality. The location of the disease on the

vulvo-anal region, where so much cellular tissue and the glandular element exists, ought to preclude its use, as sloughs have followed. The cicatrisation consequent on the suppuration arising therefrom would or might interrupt for a long time the healing process, and then it would have to be by granulation. An important and essential principle is to be borne in mind, which is, not to do injury to the healthy structures beneath and around the diseased part, if possible, as much harm has arisen from it.

The same principle is applicable to the stronger escharotics. Nearly all the active remedies of this class were tried in Mrs. H.'s case. They only aggravated the disease, and were discontinued, and a return made to the first remedy that was resorted to, the dilute nitric acid, which I esteem highly in nearly all these uterine diseases requiring a mild treatment in preference to other remedies. Cicatrisation was noticed as commencing, and afterward almost all the ulceration was healed over.

The milder escharotics are more usually applied in the serpiginous or ulcerative form. By the use of the milder escharotics on the principle I have stated, eventually a cicatrisation may ensue, or a restoration to an apparent cure, which results by a gradual absorption of the diseased tissues, a course which nature in her own way sometimes adopts, of repair through fatty degeneration instead of through the process of granulation.

CASE II. (Plate 4.) *Lupus Serpiginosus, or Extensive Superficial Lupus of the Whole of the Vulva; Hypertrophy of the Labia Minora and Majora.*

A. D., aged thirty years; married. Admitted into Bellevue hospital, April, 1863.

Constitution good. Lost her husband two years since. Menses regular; abdominal organs functionally normal. The disease commenced a year ago on the right and left side of the labia majora by a tumefaction of the labia. The lower end of the right labium was larger than the left, from which there was a slight viscid discharge, which excoriated the parts on the outside of the labia, at the junction of the labia and thigh. Both sides of the labia majora became affected to a considerable extent. On examination the labium majus, on the right side, was enlarged con-

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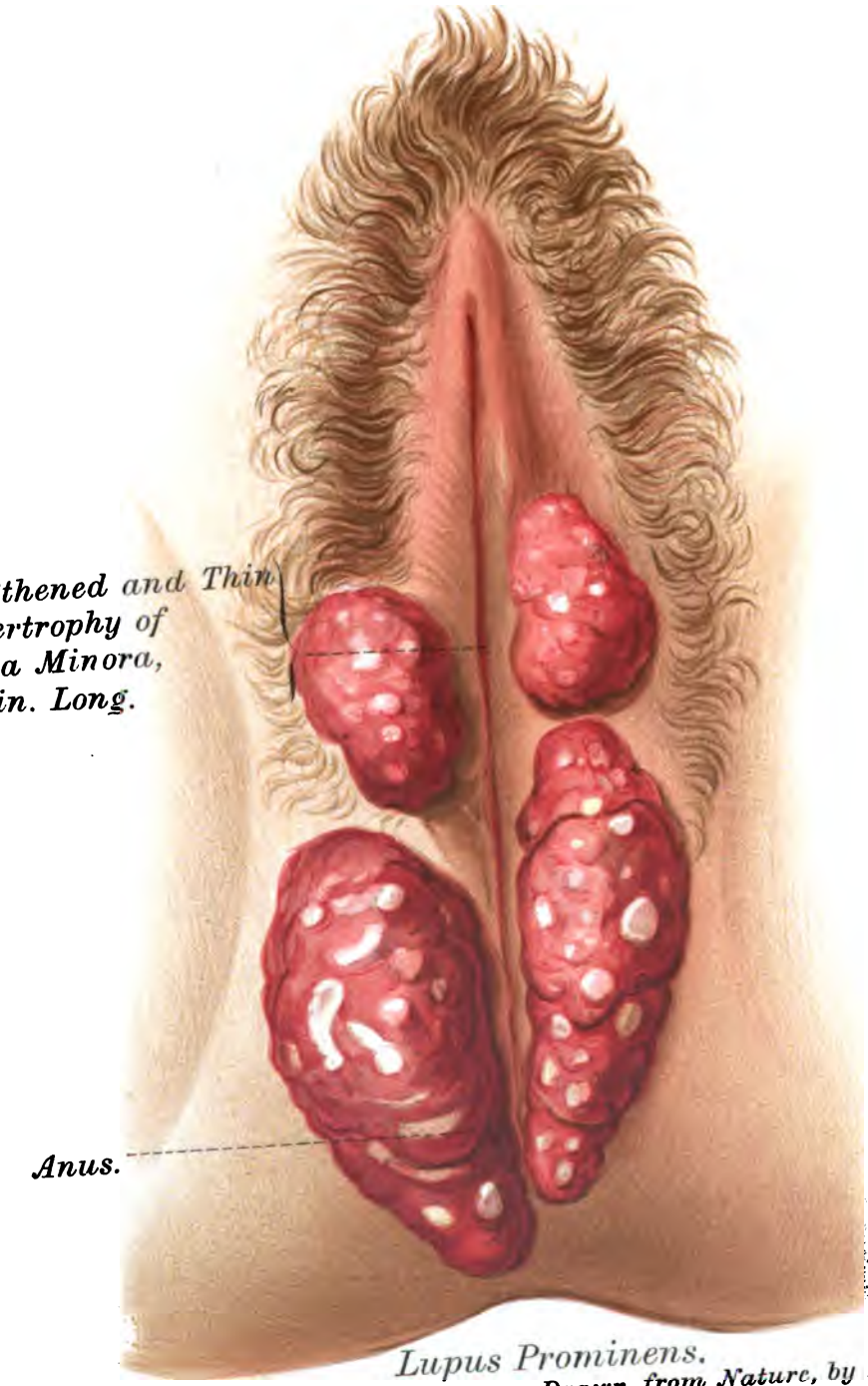


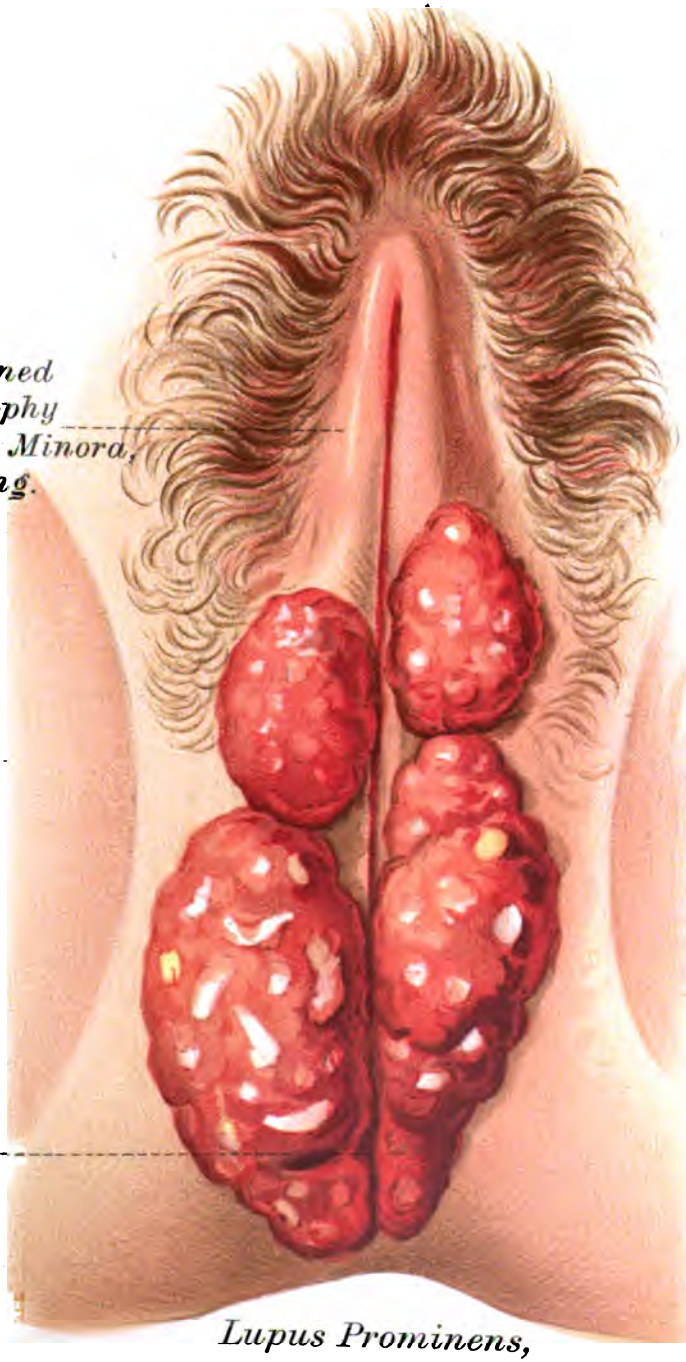
Lupus Prominens.

Drawn from Nature, by Robert Kohler.

M. S's Case. 1864.

Case IV No. 2.

Two weeks after No. 1



Lupus Prominens,

S's Case, 1864.

Drawn from Nature by Robert

siderably, and the lower end knobbed, displaying the pea-like tubercles. The left labium was nearly all destroyed; the labia minora, right and left, were extensively hypertrophied in breadth, length, and thickness, covering the whole vulva like a pink apron, giving to the touch a firm, elastic sensation. The measurements were three inches in length, and one and one half in breadth; when they were elevated they presented the appearance of two butterfly wings. At the centre of the base was a slight fissure; at the lower part of the base of the flaps the orifice of the vagina was seen nearly closed, scarcely admitting the little finger. By some effort the index finger was introduced a short distance, and the disease was found to occupy the vagina to the extent of half an inch. On the right side, at the lower part of the labium majus, the spot of an inch in length and half an inch in breadth, presenting the smooth surface without any tubercular appearance, was produced by the chemical escharotics, which were applied a few times, which is also noticed in Case IV. (See Plates 7 and 8.)

The destructive ulceration commenced equally on both sides of the labia, extended downward, involving the perinæum and anus; travelling upward, it occupied the lower part of the pubes. The discharge from this extensive surface was of a pale reddish, viscid nature, had but little odor, and was seldom very great. This is in some measure accounted for by the manner in which the pus is formed, coming from a blastema arising from the neoplasm or new formation of the connective tissues, and not from the breaking up of the normal elements of the tissue. The part from which the pus or fluid is produced is covered by a thin pellicle.

CASE III. (Plates 5 and 6.) *Lupus Prominens of the Tumor Form; Very Narrow and Thin Hypertrophy of the Labia Majora.*

M. S. consulted me in May, 1864, for small tumors, as she called them, on the vulva.

History.—This patient came from the western part of the state. Has been in the city for two or three weeks. Aged twenty-two. General health good; regular every month; menstruation first took place when she was fourteen. She has had no leucorrhoeal discharge; the general functions of the system are also regular. Parents in excellent health. The disease commenced several months ago by an itching of the labia; shortly afterward a redness appeared on both labia, which was not relieved by mild applications of sugar of lead, lime-water and milk, and other remedies locally. Three weeks after, small elevations on the skin were felt about the centre of the exterior of both of the labia majora. These elevations or pimples, as she supposed, gradually increased in two months not only in size, but also in extent and height; others manifested themselves lower down on both labia, and appeared to increase more than the others, until they reached the size which the plate represents.

On examination of the vulva, four vascular, scarlet-colored tumors, resembling large strawberries, were presented to view. The two upper, on both sides of the labia, were not so large as the lower ones. The right lower one was of an oval shape, two and one quarter inches long and one and three quarters inches broad, extending below the anus. The left was not so extensive. They were sessile.

The pea-like, tubercular appearance of the surface of the tumor was well marked, having white granular spots on it like millet seeds, which were produced by the sebaceous glands. She complained of no pain in them. The tumors were covered by a thin pellicle; there was no discharge of fluid from their surfaces.

On separating the labia a semicircular hymen was apparent. The whole appearance of the vulva was virginal. The hypertrophied labia were long and very thin, and extended four and one half inches; they were in close apposition. This form of hypertrophy is one of the marked peculiarities of this disease of the vulva.

Applications of the solution of the pernitrate of mercury were made, as well as strong acetic acid: no benefit resulted from them. On the contrary, in three weeks the growths had increased in size in all directions, and the upper and lower were approaching each other. Their bases were broader, the sebaceous glands larger, and the tubercular appearance very distinct. It was decided to remove them.

Before I refer to the treatment of this case, as Case IV is of the same order, I give a description of it, as it comes in appropriately at this time, in comparison.

CASE IV. (Plates 7 and 8.) *Lupus Prominens of the Tumor-like, Tubercular Form; Hypertrophy of the Labia Majora, Labia Minora, and Carunculae Myrtiformes especially.*

H. B., twenty-five years of age; fair constitution, and generally good health. Menstruated at fifteen; unmarried; parents enjoying tolerably good health. Regular every month. She admits having had sexual intercourse, though seldom. When she consulted me the disease had existed over a year. She had had occasionally leucorrhoea, but no other disease on the vulva. The disease commenced by a small excrescence, as she termed it, on both sides of the labia, and was soon followed by others Various local applications were advised for her comfort and to overcome the disease, but they were of little benefit. She experienced no pain from them, but their presence annoyed and distressed her very much. There was only a slight discharge from the tumors.

On inspecting the vulva, the external labia, as well as the internal, were moderately hypertrophied in length; the carunculae myrtiformes considerably so. The labia were everted, exposing the caruncles. There were eleven scarlet-colored, strawberry, prominent-looking tumors,—

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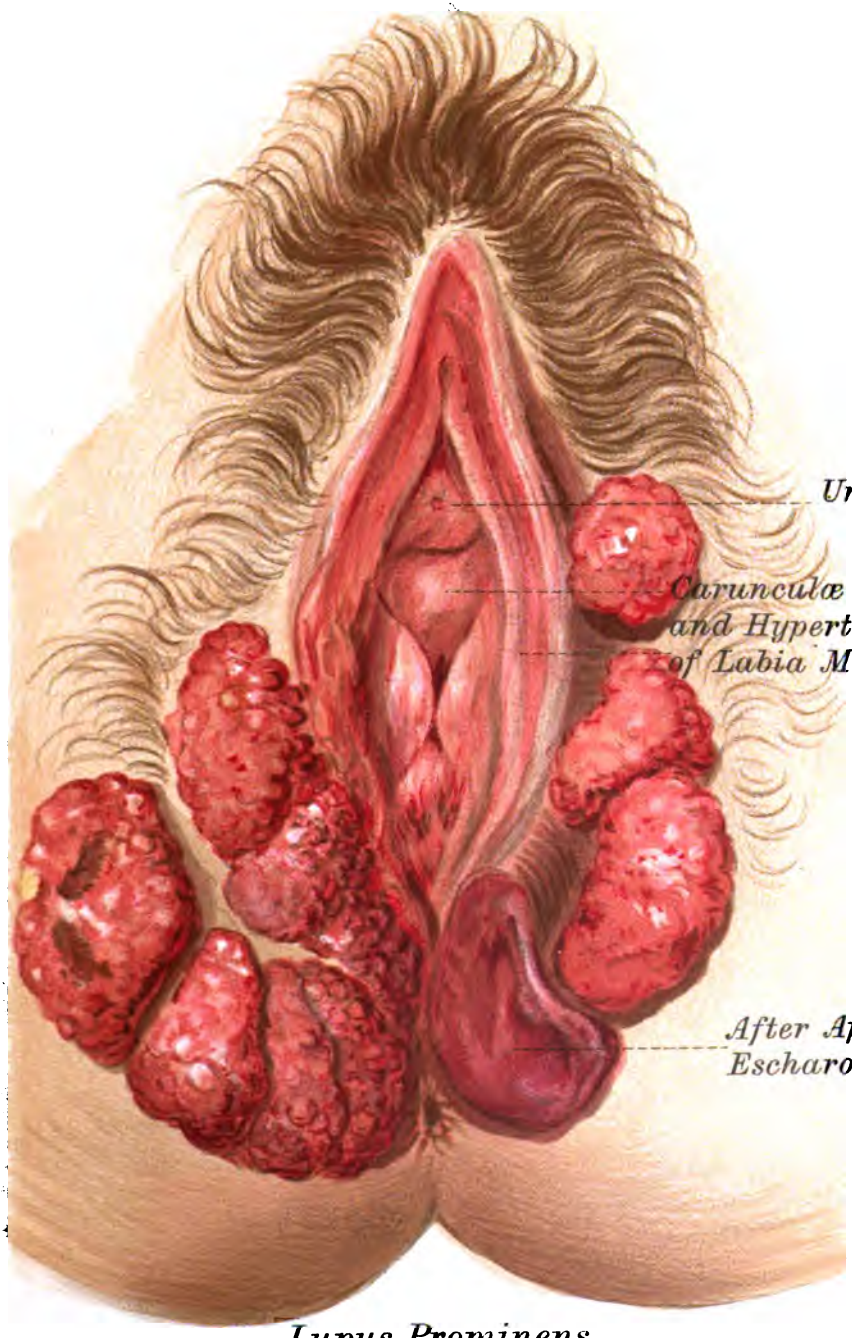
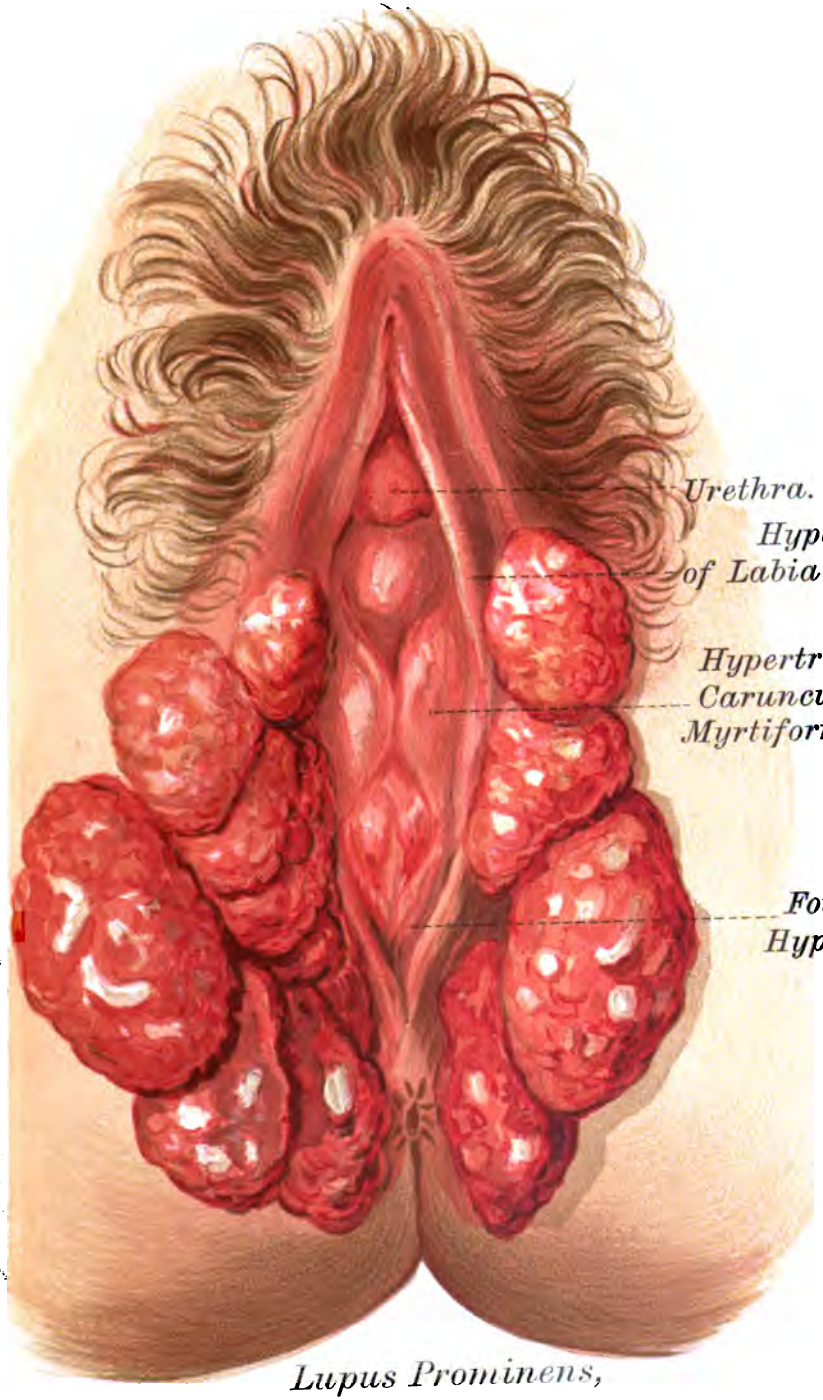


Lupus Prominens,
or
Tumor like Lupus of the Vulva.

s Case, 1864. *Drawn from Nature, by Robert Kol*

Case V, No. 2.

Three weeks after No. 1



Lupus Prominens,
or
Tumor like Lupus of the Vulva.

B's Case, 1864.

Drawn from Nature, by Robert Kohler.

seven, of different sizes, on the right labium, externally, each separated from the others, having the pea-like or tubercular character of the disease, with small sebaceous nodules on all of them. On the left labium, externally, there were four of the same nature. The tumors on the right side extended down below the anus, and were in juxtaposition with those on the left. The tumors were of different forms and sizes

The different agents which were used for three weeks were of no value. During that time the disease had increased, and presented a more extensive appearance. The seven on the right labium had increased so much in height, breadth, and length as to measure on the surface three inches in length and one and three quarters in breadth. The tumors appeared to overlap each other, and had a solid base; the sebaceous glands were more developed; the lower one, which presented the smooth appearance, was produced by the application; the discharge was no more than at first.

The treatment of both these cases, so perfectly allied in appearance to each other, was similar, by the local application of the mineral escharotics, and once by the cautery. It was apparent that no good would arise from this treatment.

Amputation of the growths was decided upon. The patients were admitted into Bellevue hospital,—one in 1864, and the other in 1865. A few days later the tumors were separately removed by the crushing scissors or écraseur; Case IV before the class. No haemorrhage followed the operation. After their removal the bases of the tumors were brushed over with the brown-red heated cautery, and lotions of biborate of soda and acetate of lead were ordered to be made *pro re nata.*

In three weeks both patients were discharged. Cicatrisation had taken place, with the expectation that they might remain cured. The constitutional treatment was continued.

Case II, four months afterward, was free from any return of the disease. I saw her several times. The internal treatment was discontinued.

In Case IV, although the patient was seen occasionally during three months, the disease showed evidence of returning on the right labium. The local treatment by the brown-red cautery kept it from increasing for six weeks, when the woman appeared quite well; and two weeks afterward no return was noticed. The white cicatrisation presented no evidence of any change favorable to a return of the disease.

CASE V. (Plates 9 and 10.) *Extensive Hypertrophy of the Clitoris, and Labia Minora in length; Destruction of the Vulvo-Anal Septum; Dissection of the Cellular Tissue all around the Rectum, with Procidentia Recti.*

S. H. was admitted into the Charity hospital in the spring of 1865.

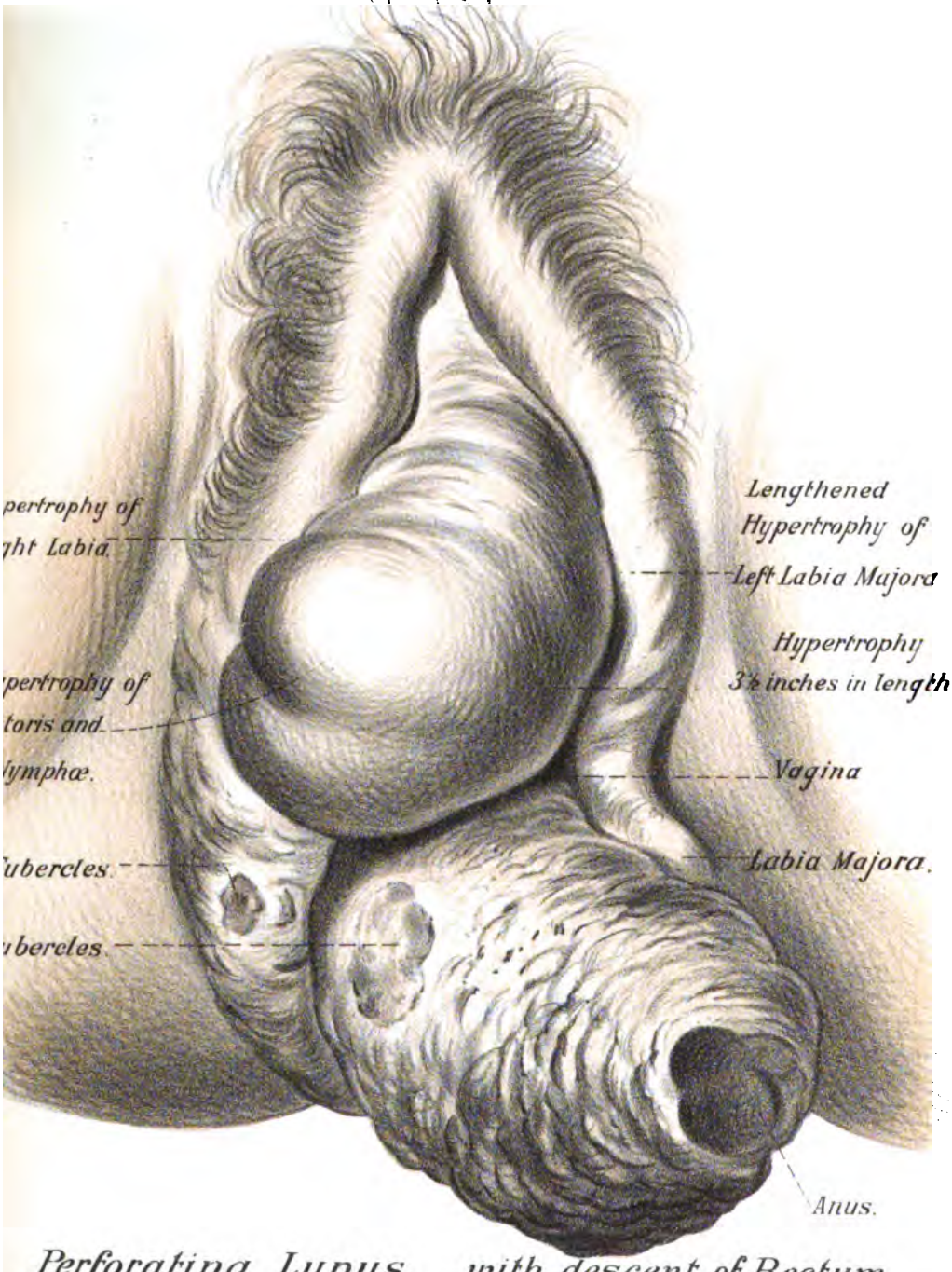
Forty-one years of age; appearance haggard and distressed; emaciated, having had diarrhoea for some two weeks. Had had three children; labor natural, but tedious; children of ordinary weight. Had been irregular for the last two years. First labor, perinaeum lacerated to the anus. Denied ever having had syphilis. There was no evidence of any secondary or tertiary symptoms; had no nocturnal pains in the head or limbs; no cutaneous disease; no affection of the mouth or throat. The disease had existed for over two years; it was only within the last few weeks the rectum became procident. Had no severe pain.

The appearance of the external organs was very formidable, with the rectum external fully three inches. There was no eversion; it was a complete destruction of the cellular tissue all around its natural attachment. The anus was not affected; the labia majora are extensively lengthened and hypertrophied; the clitoris remarkably thickened and enlarged; measured three inches in length and one and three quarters in breadth. The labia minora were slightly enlarged, firm and solid to the touch, semi-cartilaginous in consistency, and of a dull white color, as were the labia majora; the whole of the vulva, when the clitoris was depending, was covered by it and perfectly smooth. When it was elevated, as the plate will show, and expanded, it presented a semi-circular appearance, showing its relation to the labia minora. At the lower end of the right labium minus were noticed four large tubercles, and one below. Lower down was another, where the ulceration existed, as well as on the cellular tissue of the external part of the rectum. The vagino-rectal septum was perfectly destroyed; the orifice of the vagina is perceptible in the diagram where the clitoris is elevated.

The patient was made as comfortable as the nature of the case would admit, by an effort to retain the rectum within, and to arrest the diarrhoea, and by good nourishment. Death took place in two weeks. No post mortem.

The three remaining cases were of the superficial order, and the treatment carried out as mentioned in my general remarks. In one case it involved the whole of the vulva and pubes, and reached the posterior perinaeum. The patient was under observation over two years, and gave no sign of syphilis during all that time. She weighed over two hundred pounds; never suffered any pain, but was very much annoyed and distressed by the great trouble she experienced in giving attention to the application on the parts, and by the discharge, which was not very great. She would leave the hospital after remaining in it three or four months, materially improved, and sometimes, to all appearance, healed over. In the course of two or three months more she would return again. This was the course the disease pursued repeatedly during the period I had charge of the patient.

Case VI. N°1



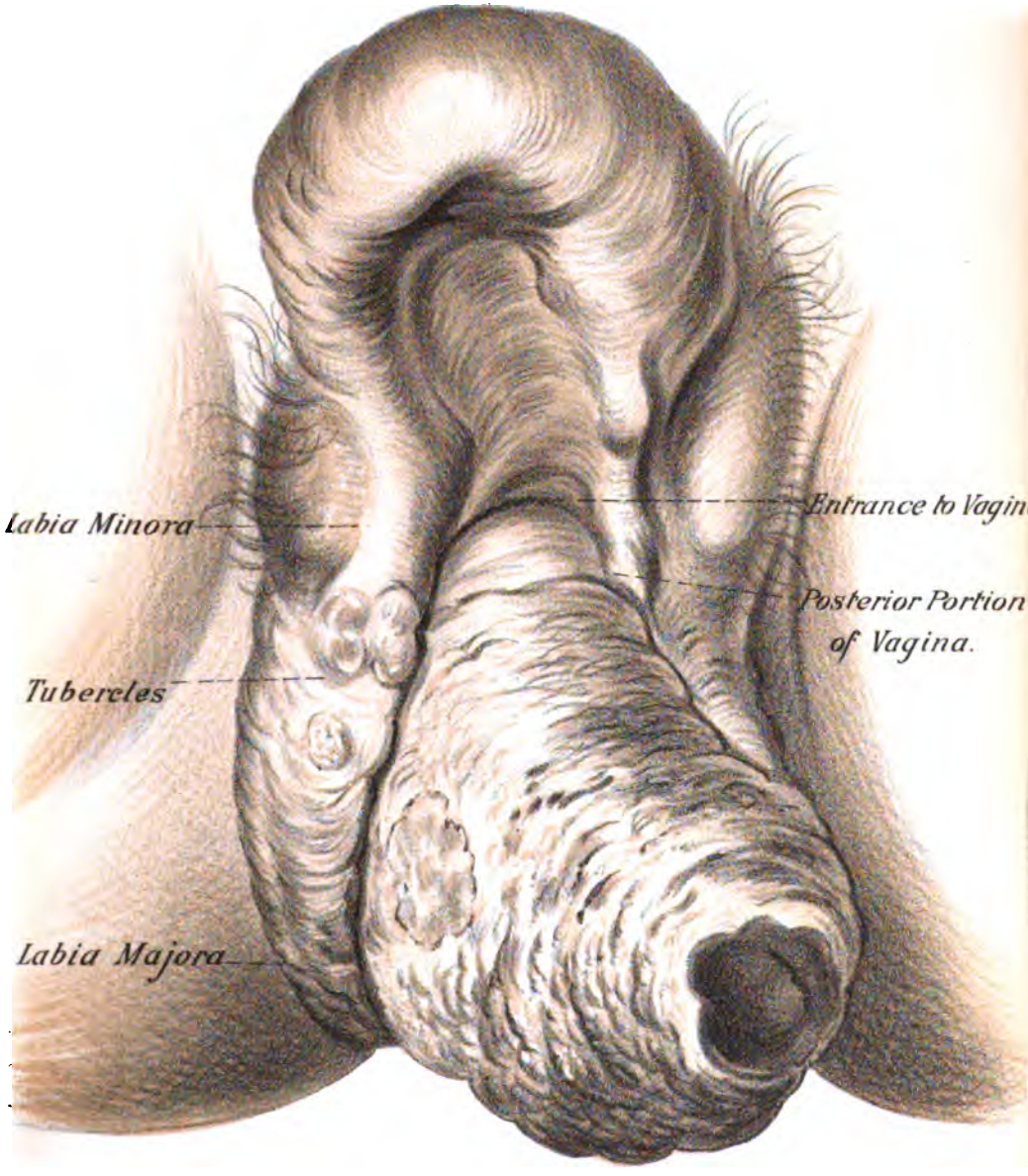
Perforating Lupus. with descent of Rectum.

. 1865. ***Drawn from Nature, by Robert Kohler.***

Perforating Lupus.
with descent of Uvula

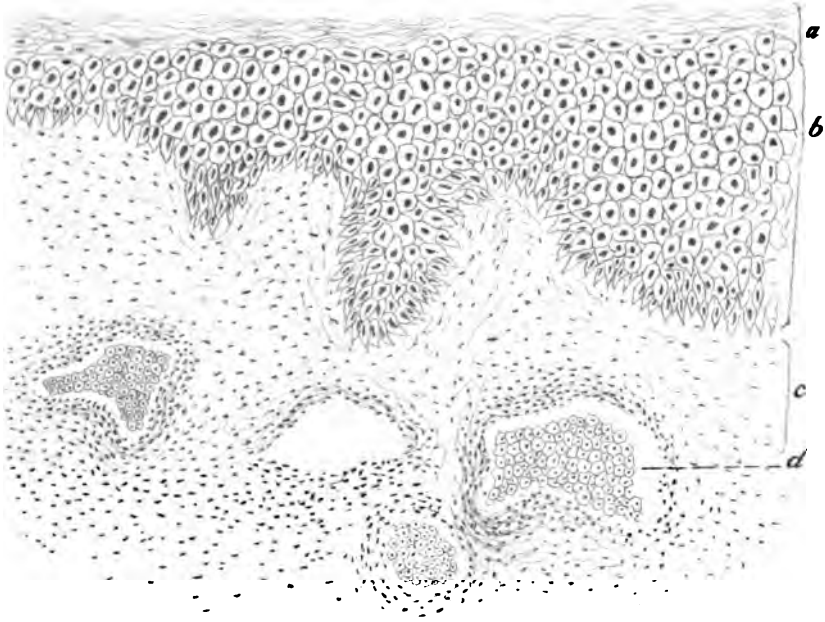
S. H. 1835. Case. Drawn from Nature, by Robert Addie

Case VI. N°2



Perforating Lupus.
with descent of Rectum

S.H. 1865. Case. *Drawn from Nature, by Robert Kohler.*



Section through Lupus Tubercle.

X 250.

Mrs. H's case. *H. M. Biggs after nature.*

(*a.*) Superficial laminæ of the epidermis.

(*b.*) Rete Malphighu showing slight hypuplasia.

(*c* and *d.*) Corimu and sub-cutaneous tissue, with deeply uncleated, round-celled tissue below forming spaces, which contain masses of epethelioid cells.

Corroding Ulcer.
Commencing.

Mrs. S's Case, 1863.

Drawn from Nature, by Robert Kohler.

Terminating these remarks on the scientific part of my address, and trusting that I have not wearied you, I hope we shall stimulate ourselves to a continuous and persevering effort to advance in the pathway of those eminent men who have preceded us, and who have passed away from our midst, to press onward to the highest standard, with the resolve that this Association and its labors shall be on the vantage ground of medical progress.

Not to dwell longer on the threshold of my duties, I will now invite your attention to subjects of more interest,—the business which devolves on us, and which is to claim your consideration.

May I presume, in closing, to ask you, independent of the pressure of daily work, which I know is great, "to stir up your pure minds by way of remembrance," that you should continue to fulfil the expectation and desire of the founders of our Association, sustaining its usefulness and its honorable work, as you continue to furnish it with the necessary material for thought and discussion? Our senior Fellows, who have so oft instructed us, will, I am sure, not forget us. They will give us of their store-house of scientific and practical knowledge, their time, and the benefit of their matured experience.

I do not forget to look to the younger Fellows, not so pressed for time with the arduous and active duties of their profession, to extend to us the results of their energy and genius, tendering to all the request to send us records of their observations and work, so that in this Association every one will feel and realise that in the success and prosperity of it he has a personal interest and record.

In every scientific association, no matter of what nature and character it may be or is, I assume it will not be unacceptable to incite the abiding interest which has been manifested in this Association.

Ruskin has said that "The life of a man must be reckoned rather by the work he has done, than by the number of his days," and the same I conceive is true of such an association as ours in these days and times of great and rapid progress.

THE USE OF HOT WATER IN SURGERY.

By Theodore R. Varick, M. D., of Jersey City.

September 27, 1887.

The Use of Hot Water in Surgery is the subject to which I purpose calling your attention on this occasion. In a paper read by me before the surgical section of the American Medical Association at its meeting in Washington, in May, 1884, on "Railroad Injuries of the Extremities of the Human Body," etc., I considered the haemostatic effects of hot water when applied to the abraded surface of operation wounds. See Journal of the American Medical Association, vol. 3, p. 372.

In a paper also presented by me on the "Protective Treatment of Open Wounds," before the New York County Medical Association in February, 1885, the principles involved in the method of treatment of wounds by hot water were more fully discussed, and the results of experiments, demonstrating the protective power of a film of coagulated albumen was shown, absolutely preventing the ingress of atmospheric germs, and being composed of autogenous material, there was no possibility of any toxic effect on the part of the agent employed, as against the many recorded instances of poisoning by the use of carbolic acid and corrosive sublimate.

It is now my intention, after over two years' farther experience, to consider the results obtained, and to answer sundry criticisms, undoubtedly due to a total misunderstanding of the principles involved in the method and mode of application of the remedy.

Since the commencement of the practice under consideration in August, 1879, in many operations, both capital and minor, in hospital as well as in private practice, and frequently

with the most unhygienic surroundings, there has been observed, except in one case, an absolute exemption from sepsis in any form. This case will be considered farther on. The method of treatment of operation wounds by hot water is based upon the following propositions:

First. After the larger vessels have been tied in an operation wound, there occurs an outward flow from the divided arterioles, venules, and lymph spaces, of a sero-sanguineous fluid, highly albuminous in its character, in varying quantity, and continuing for a longer or shorter period.

Second. As long as this outward flow continues there is a perfect immunity from infection by atmospheric germs.

Third. The application of hot water checks this outward flow, coagulates the albuminous elements in the fluid, and forms an impenetrable shield over the surface of the wound.

Fourth. Hot water, applied to the abraded surface, acts as a powerful cardiac stimulant, and controls shock.

In order to test the temperature necessary to produce coagulation of albumen contained in serum, the following experiment was made:

A test tube was partly filled with serum, and a thermometer so arranged that the bulb was immersed beneath the surface of the fluid. The test tube was immersed in water and heat applied.

At 68° C. = 154.4° F., the serum, at first bright red, became darker and partially coagulated; and at 70° C. = 158° F., it assumed a grayish, muddy appearance, and was completely coagulated.

It was observed that the temperature of the water in which the test tube was immersed exceeded that of the contents of the test tube by about 14° C. or 57.1° F. In the first instance the hot water employed stood at 179.6° F., and in the latter 183.2° F.; or, in other words, it is necessary that the water should have a temperature of not less than 183° F., in order that firm coagulation may result. At 200° F. to 212° F. it will blister if applied to the skin, and, if a sufficiently prolonged application be made, will *cook* the abraded surface, or,

in other words, coagulate the albuminous elements in the superficial capillaries, and still farther increase the protective power afforded by the method. I am in the habit of using water slightly below the boiling point, or at the only diminution of temperature it would suffer during the time occupied in transit from the fire to the operating room.

It seems to me evident, that owing to the greater vitality of the deeper seated muscular tissues, they possess much greater powers of resistance to the effect of heat than the skin. In making the application this fact should be recognised, and care taken to prevent the water running beyond the abraded surface and blistering the surrounding integument, as I have seen occur in several instances, owing to carelessness of the one making the application. *The application should be continued until all oozing is stopped, the parts are thoroughly glazed, and the red hue of the tissues is decidedly deadened.*

The secretions which take place from operation wounds treated by this method are usually of a clear, or slightly opaque serum, which after thirty-six or forty-eight hours may contain flocculi of coagulated albumen in a greater or less quantity, governed by the intensity of the application and the amount of the previous oozing. The appearance of albuminous flocculi is more especially observed in cases in which the wound is closed, and treated by through drainage.

In open wounds the albuminous deposit is more appreciable to the eye, resembling in some cases the exudation of diphtheria. This exudation in the course of a few days is thrown off, leaving a healthy granulating surface beneath. The immunity from septic absorption, which is afforded to patients who may have undergone capital operations under the most insanitary surroundings, is well illustrated by the case of Thomas Gunn, who was admitted to the Jersey City hospital July 18, 1883, for lacerated wound of the foot, and who underwent amputation of the leg at its lower third, and that of Adam Hilt, who was admitted to the same hospital July 23, 1883, for compound comminuted fracture of the leg,

followed by amputation of the thigh at the lower third. Both were the result of railway injuries. Gunn and Hilt were both discharged cured September 3, 1883.

The point of interest lies in the fact that there were in the hospital at the time, in the same ward, several cases of erysipelas, and a large number of chronic abscesses, and in the female wards immediately overhead four cases of puerperal fever. At no time during the progress of treatment was there observed the slightest untoward symptom. As a promoter of reaction, cases are constantly occurring which illustrate the power of hot water as a cardiac stimulant when applied to the abraded surface of an operation wound.

In a case of hysterectomy performed by Dr. Nathan Bozeman, in which the symptoms of shock were urgent, I injected into the peritonaeal cavity water at 120° F., with an immediate arrest of collapse, and rapid and complete reaction.

In a case of suppurative peritonitis, due to perforation of the appendix vermiformis, for which I performed laparotomy in June, 1886, I injected water at the same temperature as in the preceding case, thoroughly washing out the cavity of the abscess. The patient recovered, although he was bordering on collapse at the time of the operation.

In the New York "Medical Record," March 19, 1887, Dr. W. Gill Wylie reports a case of laparotomy in which he used water at 105° to 110° F. for the relief of shock and arrest of haemorrhage, with immediate relief of the symptoms. After describing the operation, he uses the following language: "I noticed that not only was the bleeding checked by the hot water, but the indications of shock, which were present to an alarming extent,—that is, feeble heart-action, cold perspiration, etc.,—were at once relieved by the hot water." "The result was magical. After this the symptoms of shock did not return, and at no time was there a sub-normal temperature."

These statements of Dr. Gill Wylie are, I believe, absolutely true, as I have during the past eight years demonstrated time and time again,—in fact, so frequently as to lose all nov-

elty to those who are in the habit of witnessing operations in St. Francis's hospital.

When, however, the astonishing discovery is made, in 1887, that hot water will arrest oozing, and that hot water will promote reaction and relieve shock, we are forced to the conclusion that the medical periodical literature of the day is to the gentleman "as a sealed book." I cannot bring myself to believe that he would intentionally claim as his own a procedure in the treatment of operation wounds, which I on two occasions, viz., in the "Journal of the American Medical Association" in 1884, and also in the New York "Medical Journal" in 1885, announced to the surgical profession, and which I have continuously practised since 1879. He has no more claim to priority in the method of treatment of wounds by hot water than he has to the invention of Corning's method of using cocaine, or to Sims's dilator.

JUN 7. 1888

The restorative powers exerted by hot water on the general circulation are also to as great an extent manifested on the local circulation of a part whose vitality is to a certain extent damaged by contused or contuso-lacerated wounds, as of the extremities, such as we often meet with in hospital practice among the employés of the numerous railroads which have their termini in our neighborhood. Poiseuille has shown in his experiments on the web of a frog's foot that if the part be covered with water at 104° F., the rapidity of the current in the capillaries is so much increased that we can hardly distinguish the form of the corpuscles. These injuries are usually sustained in the coupling of cars, and exhibit every variety of severity, from simple rupture of the skin with subcutaneous extravasation of blood, to a general crushing of the whole part into a homogeneous mass, for which the only remedy is amputation. For the treatment of every degree of injury except the last mentioned, the limb is placed in a water bath as hot as can be borne, and retained for a half hour at a time. These baths are repeated three or four times a day. The part injured, during the interval, is wrapped in oakum wrung out of hot water, and covered

with oiled silk. By this method many a limb has been saved which seemed damaged beyond recovery.

There seems to be a lack of appreciation on the part of some who have criticised and profess to have practised the method under consideration. The late Prof. Frank H. Hamilton, in a very able article on "The Art of Primary Union by Adhesion," published in the New York "Medical Record," January 2, 1886, says,—"Dr. Varick recommends that the water have a temperature slightly below the boiling point: this might do if one were to apply it by means of a sponge, and then only for an instant." "But if employed continuously or by irrigation through the nozzle of a tube, it ought not to exceed in temperature 112° or 115° F., or a temperature which may be easily borne by the hand."

Dr. Hamilton evidently failed to appreciate the mode and object of the application advocated by me. The application is always made with a clean sponge or sheet lint, and is kept in contact with the part for several minutes, or frequently renewed applications are made, until the changed appearance of the parts is observed, as previously described.

Again: The object of a high temperature for the coagulation of the albuminous exudate on the surface of the wound is not recognised. The temporary glazing which occurs over the surface of a wound, as the oozing gradually and spontaneously ceases, must not be confounded with, nor considered as identical with, that produced by the application of hot water.

The glazing first named is nothing more than the result of coagulation of the sanguineous flow, having a surface of serum with an underlying clot, and due to fibrinous contraction and a process of desiccation. It is highly putrescible, and easily washed away. As albumen at the temperature of the body is fluid, it possesses no protective power, and partakes of the same liability to putrefaction as the other elements of the exudate. Hot water applied deprives it of its putrescible property, and it will exist unchanged for an indefinite period. I have kept a film of coagulated albumen, applied to a piece of fine linen, unchanged for a period of over four months, while

the beef tea for which the albumenised linen was used as a cover, remained absolutely unchanged for a like period.

Before I used hot water, and used warm water instead, the effect invariably was to increase the outward flow, to keep patent the divided capillaries, and to prevent the glazing of the parts; and many cases of sepsis followed. It seemed that the danger of contamination of the wound was enhanced by this method.

An amusing instance of failure to comprehend the principles involved in the subject under discussion occurred recently in a hospital not a thousand miles from New York. A surgeon, having occasion to perform an amputation at the lower part of the leg, and after ligating the vessels, was annoyed by a somewhat free oozing which he was unable to control. A gentleman present, who had on several occasions witnessed the haemostatic effect of hot water in St. Francis and Jersey City hospitals, suggested its use in this case. The hot water was brought, and cold water added until it could be easily borne by the hand; then by means of a sponge it was applied for a moment several times. This proving ineffectual, the sponge, now saturated with water scarcely more than blood warm, was held at a distance above the wound, and the water allowed to trickle over the surface. It is needless to say that this also failed. The verdict of the sapient operator was that "Hot water is no good."

It would be impossible even if it were desirable to occupy the time of this assemblage with an enumeration of the various operations to which this method is applicable, and in which it is being constantly resorted to. I shall therefore content myself with a detail of major amputations performed by me since 1879, with a comparison of results obtained by me with those of others collated from statistics furnished by various authors in this country and in Europe.

In the "Inter-National Encyclopaedia of Surgery," vol. 1, p. 626, in a table showing the comparative mortality of amputations for injury and disease, we find the following percentage of mortality for major amputations by the authors enumerated:

	Cases.	Mortality. Per cent.
Malgaigne	560	53.3
Trélat	1,038	47.5
Golding Bird	859	31.8
Callender	358	20.6
Butlin and McCready	416	18
Holmes	500	31 6
Spencer	557	26.9
Chadwick	692	26
Gorman	296	36.4
Varick	90	44.4
Norris and Morton	982	25
Ashhurst	100	28
Total cases	6,448	
Mortality		32.9

In the London "Lancet," April 9, 1887, we find at page 720 a paper entitled "The Result of Major Amputations treated Antiseptically in the Newcastle-on-Tyne Infirmary, from April 1, 1878, to December 31, 1886," by Mr. Frederick Page, as follows: 382 major amputations with a mortality of 7.5.

At the University College hospital, up to May, 1871, of 307 consecutive major amputations, 79 proved fatal—a mortality of nearly 25 per cent.

Of 53 consecutive major amputations performed by me up to August 1, 1877, and treated with hot water, I report 39 primary cases with 2 deaths, and 14 secondary cases with 1 death. The primary cases were as follows:

Thigh, 18 cases; 17 recovered, 1 died.
Leg, 6 cases; 6 recovered.
Forearm, 6 cases; 6 recovered.
Arm, 6 cases; 6 recovered.
Shoulder joint, 2 cases; 2 recovered.
Right arm and left thigh, with contused and lacerated wound of right foot, 1 case; 1 died.

Secondary cases:

Thigh, 7 cases; 7 recovered.
Leg, 3 cases; 3 recovered.
Arm, 1 case; 1 died.
Hip joint, 1 case; 1 recovered.
Forearm, 2 cases; 2 recovered.
Total, 53 cases; 50 recovered, 3 died.
Mortality, 5.6 per cent.
The fatal cases were as follows:

First. Fred Harmon, admitted to Jersey City hospital, Aug. 13, 1882, for compound comminuted fracture of the leg, for which amputation of the thigh at its lower third was done. There were several attacks of secondary haemorrhage, and although the femoral artery was ligated in Scarpa's space, he died of a sudden haemorrhage on the 26th of the same month.

Second. Cornelius Pudney, a private patient, suffered amputation of the arm on account of caries of the elbow joint. He progressed favorably from the time of operation, September 2, 1884, up to September 8th, when he died of a sudden attack of angina pectoris.

Third. Noah Rude, admitted to St. Francis's hospital, Jersey City, October 26, 1886, having sustained a compound comminuted fracture of right forearm, a complicated compound comminuted fracture of left leg, and a contused and lacerated wound of right foot. Amputation of the right arm and left thigh was done, and the remaining foot dressed with iodoform. He bore the operation well, and progressed favorably until November 1st, when symptoms of septicaemia developed, and he died November 7th, on the 11th day after the injury. The operation wounds had united to nearly their whole extent by first intention, but the remaining foot had sloughed extensively, and was no doubt the source of his septic infection.

The case of Pudney might with propriety be excluded from the list of unsuccessful cases, as he died of a disease totally unconnected with the amputation, and which he had suffered from on several occasions previously. Excluding this case, the rate of mortality would be reduced to 3.7.

Of the 53 cases recorded above, 44 were performed on account of railroad injuries. Thirty-four of the 53 cases reported by me occurred in St. Francis's hospital, Jersey City, from August 12, 1879, to August 1, 1887, with the following result:

HOT WATER METHOD.

	Cases.	Recovered.	Died.
Thighs	16	16	..
Legs	4	4	..
Arms	5	5	..
Forearms	6	6	..
Hip joint	1	1	..
Shoulder joint	1	1	..
Right arm and left thigh	1	..	1
Total	34	33	1

Mortality, 2.9 + per cent.

During the same period, in the same hospital, in the same wards, and with the same hygienic surroundings, there were done 25 major amputations under Lister's method, with the following result:

LISTER'S METHOD.

	Cases.	Recovered.	Died.
Thighs	10	6	4
Legs	3	3	..
Arms	7	6	1
Forearms	2	2	..
Shoulder joint	1	..	1
Both legs	2	1	1
Total	25	18	7

Mortality, 28 per cent.

Enough has been said to illustrate the therapeutic effects of hot water in surgical practice. It has stood the test of time and experience, and fulfilled every claim made for it. The results obtained in major operations under its use are

unexcelled by any other method of antisepsis, while in the matter of major amputations it is unequalled. Simplicity and convenience are its characteristics.

The baseless fear of using water too hot may have deterred some from adopting the method, while others again look with disdain at the lack of display of the paraphernalia employed, the homespun nature of the appliances used, and the absence of that foreign glamour which to some presents an irresistible fascination. In it the gauze, protective, and carbolic spray find substitutes in a wad of oakum and grandmother's tea-kettle.

Since the preceding paper was written I have received the following letter from my friend, Dr. J. D. McGill, surgeon-general of New Jersey, and one of the surgeons to St. Francis's and Jersey City hospitals:

Dr. T. R. Varick:

DEAR DOCTOR:—Inclosed you will find a record of eighteen capital amputations which have occurred in my practice during the last four or five years.

Six of these amputations were performed and subsequently treated according to Lister's method; the remaining twelve (all amputations performed by me since March, 1885) were treated at the time of operation with hot water, after the method advised by yourself. The subsequent treatment of these twelve cases has been to observe absolute cleanliness, and to insure perfect drainage.

The iodoform dressing has been the one employed.

LISTER METHOD.

Site of Operation.	No. of cases.	Primary.	Secondary.	Recovered.	Died.
Thigh	1	1	..	1	..
Arm	2	2	..	1	1
Forearm	1	1	..	1	..
Leg	2	2	..	1	1
Total	6	6	..	4	2

The deaths were in both cases due to septicaemia.

VARICK METHOD.

Site of Operation.	No. of cases.	Primary.	Secondary.	Recovered.	Died.
Thigh	3	2	1	3	..
Leg	4	4	..	4	..
Foot (Pirogoff's operation)	1	..	1	1	..
Arm	2	1	1	2	..
Forearm	2	2	..	2	..
Total	12	9	3	12	..

Yours respectfully,

J. D. McGILL.

BICHLORIDE OF MERCURY—ITS USES AND ABUSES.

By CHARLES S. WOOD, M. D., of New York County.

September 27, 1887.

The use of mercury as a therapeutic agent is of comparatively recent date. To the Greeks and Romans its value was unknown, and the Arabian physicians only used it for certain diseases of the skin. It was not till the middle of the sixteenth century that the special properties of mercury were fully appreciated, but since that time the metal has continued to hold a high, though fluctuating, value as a medicinal agent in all parts of the civilised world.

At first the article, in a finely divided state, or in the form of vapor, was used; but soon its various compounds were found to be endowed with much greater powers than the metal itself, and with the discovery of these new compounds the number of mercurial medicines has largely increased, until to-day the number of such preparations is great, while the various uses to which they are applied are numberless.

Of the one form only of mercury, however, do I propose to call your attention at this time, viz., the bichloride, or corrosive sublimate, which, on account of the recent discoveries in bacteriology, and the large use made of it as a direct sequence, both in medicine and surgery, owing to its acknowledged power of destroying the lower organisms, renders it the most important of all the preparations of mercury; and although I do not expect to advance any new ideas relative to its merits or demerits, I think it is well to carefully consider its uses and abuses, for the purpose of correcting any errors that may have occurred in its almost universal application at the present time. Of its great power in the

modification of many diseased processes there can be no question. The fact of its being an exceedingly irritant poison is equally established. Like a double-edged sword, it cuts both ways. With proper regard on the part of the practitioner, it is an exceedingly valuable remedy. With thoughtlessness or carelessness, it becomes our most terrible foe. It is on this account that I have thought it might be profitable to devote a few minutes to its study, both as a remedial agent and as an antiseptic, realising the fact that reiteration is a potent means of deeply impressing a given point upon the memory.

Some thirty-five years since, before the development of the bacterial theory as explanatory of the production of disease, at a time when the humoral doctrine of disease was most prevalent with the profession, I was attending a widow of sixty years of age, who was slowly wasting away with some chronic ailment. She ate and slept fairly well: the different functions of the body were normal. She complained of nothing in particular except a feeling of weakness, amounting to exhaustion on making any exertion. There was a slight cough at times, with little or no expectoration. Near the close of her life, hectic with diarrhoea, and night sweats made their appearance, with oedematous feet and ankles. An examination of the chest revealed nothing of significance. Physicians who had seen her previously pronounced her disease scrofula, or marasmus, or hepatic trouble, as the opinions of each happened to vary.

After death, in connection with several other physicians, an autopsy was made, and a condition of general tuberculosis was found; nodules isolated in the lungs, but no aggregation nor softening; some in small, soft, fibrous masses, others hard and calcareous, but no vomicae, no softening of lung tissues. The liver, stomach, peritonaeum, &c., were found in a similar condition. Reflecting seriously upon the obscure case (which I had plenty of time to do), and remembering the solvent action of bichloride of mercury upon fibrous tissue, I commenced treating some cases of phthisis, which

presented themselves from time to time, with this remedy, giving it in $\frac{1}{10}$ grain doses three times a day in some bitters, in addition to the other well known means for the alleviation of the symptoms of this dread disease. In some there was a decided improvement, with a diminution of the cough and expectoration, giving one great hopes of permanent relief. In others, the medicine produced pain in the bowels, tenesmus, and bloody stools. Having later met with some old physicians in consultation, I was denounced so severely for my audacity in slowly but surely poisoning my patients, that I soon abandoned the experiment, which, with the light we now have, I should probably not have done.

It is, at the present day, a pretty generally accepted fact that this remedy exerts a potent effect upon the causes of tuberculosis, whether general or circumscribed as in phthisis, whether produced by the bacilli tuberculosis or not; that given for a long period of time where the predisposition exists in so-called scrofulous individuals, with enlarged axillary and cervical glands, it will by its alterative and absorbent properties often avert the impending calamity, and prevent the development of tuberculosis, even where the symptoms point strongly to an early decline and death from phthisis.

When the earlier symptoms of the disease have exhibited themselves, it may in many cases be arrested in its initial stage by the use of this remedy, conjoined with the appropriate dietetic and hygienic appurtenances. Although the system will not tolerate enough of the medicine to destroy the bacilli tuberculosis when they have once found lodgment in the lungs, it will counteract the worst symptoms arising from the ptomaines, the product of the bacilli, as a rule, in a more satisfactory manner than the present fashionable Bergeon's method.

Syphilis.—In this common, wide-spreading disease, which inflicts so much misery not only upon the offending parties, but on the innocent offspring of corrupted parents, when the first and most acute symptoms are relieved by other and

more prompt measures, this remedy, combined with the iodide of potash, will, in the great majority of cases, eradicate the remnants of the disease, and restore to the individual, as far as possible, the lost health, especially when administered with vegetable bitters and iron.

Who does not remember, when the patent sarsaparilla syrups were so largely sold by the manufacturers and consumed by the good people, who must always be swallowing some drug, that, while the profession was denouncing all patent medicines, and properly so, too, many persons of pale cachetic faces, with adenopathy and so-called rheumatic pains, anorexia, and insomnia, were restored to health by taking a dozen or more of these bottles of sarsaparilla? And why? is the pertinent question I fancy I hear you ask. Not from any virtues in the sarsaparilla itself, for it has few, if any. Not according to the present method of faith cure, but because it was found on analysis that the one and only active agent in the compound was corrosive sublimate, in minute quantities, 't is true, but sufficient, when taken for a long period of time, to favorably modify the action of nutrition and excretion, and thereby permit nature to assume her wonted sway.

In chronic gastritis, where no ulcer is present, a condition which we are all constantly meeting in our daily rounds among our patients, accompanied by a greater or less amount of distress both after eating and when the stomach is empty, indicated by the eructation of gas, a constant craving, like that of a pregnant woman, for something abnormal, such as chalk, charcoal, wax, chewing-gum, especially for some form of stimulant,—although the patients may have never been accustomed to the use of anything of the kind,—great mental depression, entire absence of energy or ambition, partial or total indifference to everything going on around them, even to their own friends and families, wishing they were dead and out of their misery, an apparently studied effort to make every one around them as unhappy as themselves, with no love for the past nor hope for the future, buried themselves

in Stygian gloom and darkness, they would apparently like to see every one else engulfed in the same dismal abyss.

Next to absolute insanity, I have often thought this class of cases represented the nearest approach to it; and yet they are not insane, only in an exceedingly morbid, gloomy state, from the disease of the stomach. Now regulate the man's diet and exercise, limiting the quantity as well as quality of his food, and give him four times a day, always after eating, $\frac{1}{50}$ grain of the bichloride, combined with $\frac{1}{2}$ to 1 minim of Fowler's solution of arsenic, and we may expect in a reasonable time to see an entirely changed man, both mentally and physically.

In Bright's disease of the kidneys, occurring at or subsequent to the age of forty-five, representing as it does usually a degeneration of all the tissues of the body, especially of the arterial system, the resultant in the majority of cases of high living with a lack of physical exercise as well as perhaps of the necessary amount of sleep, the influence of the bichloride is in many cases most marked, arresting, as I believe it does, the degenerative process, both in the kidneys and arteries, and by virtue of its qualities as a fibrin solvent, preventing the changes in the arterial coats from taking on the morbid action to which they are so prone.

Dr. Willard Parker, more than forty years since, asserted most emphatically that in Bright's disease, occurring during the middle period of life, this agent, if given early, would in a fair proportion of cases effect a permanent cure, and where this happy condition was not realised the improvement would be great, and commensurate with the early and persistent use of the remedy.

Dr. John C. Peters reports that the treatment of this disease by the use of bichloride of mercury began in New York more than forty years since with Dr. J. A. Smith, and was followed by Drs. Griscom and Joseph M. Smith. The number of cases treated by them was twenty-six, the majority being very much improved, although the urine contained albumen. It was given in doses of $\frac{1}{16}$, $\frac{1}{8}$, and even $\frac{1}{4}$ grain

every four hours, dissolved in tincture of cinchona. It will be readily perceived that in these cases reported by Dr. Peters the quantity given at a time was much too large, and the frequency too great to be tolerated by the system for any length of time; hence its disuse, which followed. The disease being essentially of a chronic nature, the remedies should be continued for a long time, and must be given in small quantities. I have notes kept at the time of a large number of cases of Bright's disease in which the albumen was persistent, with casts in the urine, where they commenced taking this remedy and continued its use before cardiac hypertrophy had become developed, in which the disease apparently was arrested, and a comparative state of health has been enjoyed for as long as ten years in some whom I still have under observation; and although the albumen never entirely disappears, there is less of it than when they first came under my observation, and they are now able to attend to their professional or other duties satisfactorily and with comfort. I am in the habit of giving it in doses of $\frac{1}{30}$ to $\frac{1}{20}$ grain three times a day, after meals, in pill form, combined with iron or the chloride of gold and sodium, according to whether there is a condition of anaemia present or not; and from many years' experience I have no doubt of its efficacy in arresting the progress of the disease, prolonging the life, and increasing the happiness of the patient, even where the structural changes are so great, on account of the length of time it has existed, that a complete recovery cannot from the very nature of things be expected. But, taken in the early stages, its use, conjoined with abstention from alcohol in any form, and with the limited use of nitrogenous food, such as beef and eggs, I have no hesitation in saying that the disease can be, and often is, arrested permanently.

In scabies, pediculi corporis, and capitis, this remedy, made into an ointment, will, when used with care, prove to be the most satisfactory agent we can employ in eradicating these pests of our existence.

But since the discovery of bacteria as being the cause of

so many different diseases, its use in surgery marks an epoch in the treatment of wounds and injuries. Since its power of destroying all micro-organisms has become so well known, no surgeon is without it. No wound is united until it has been previously douched with a solution of the all-powerful germicide, except in some rare instances where it is not attainable, as in the field service of armies. Perhaps no greater boon has been bestowed upon modern surgery than the discovery of the causes that call for the constant use of this remedy as an antiseptic. We must remember, also, that a remedy fraught with so much good, and which has become as familiar to us in its various strengths as sage tea is to the matrons of the land, who dose their children with perfect impunity, should not be used too freely and carelessly, and may become potent for evil as well. Familiarity with an article of every-day use begets confidence that may be, and often is, misplaced.

Nevertheless, the accidents accompanying its use have been less in number than we might reasonably have expected, when we take into consideration the virulent action of the remedy, and the very extensive use that has of late years been made of it as an antiseptic in the treatment of wounds of every nature, both surgical and gynaecological. Several deaths have been reported from its use in washing out the peritonaeal cavity after the operation of ovariotomy; also, in the pleural cavity, subsequent to thoracentesis for empyema, and of a strength of only one to five thousand, which has been supposed to be safe for almost any purpose. It may be fairly questioned whether it is safe in any strength when applied to a cavity lined with a serous membrane, and as we have other means, like hot water, either with or without the addition of thymol, carbolic, or salicylic acids, there would appear to be no need of its use in the class of cases above mentioned. As an external douche, following amputations of an extremity, or of a scirrhus breast where a large surface is exposed, the 1 to 1,000 solution, now so commonly used, may, and often does, produce a toxic effect, as I unfor-

tunately had occasion to experience of late where I had removed the mammary gland of a rather delicate lady. Kocher, of Berne, who is constantly operating in the hospital, has given up the use of this stronger solution, and relies with perfect satisfaction upon the 1 to 5,000. He states that when stronger than this was used, intoxication occurred quite frequently, evincing the impropriety of its use, where a large surface is exposed, of a strength greater than 1 to 5,000.

On account of its wonderful power of not only destroying all of the micro-organisms but the ptomaines, or poisons generated by them, as well, it has been logically inferred that in diphtheria, the present scourge of our land, if a sufficient quantity could be introduced into the system without poisoning the patient, this dread disease might be more easily and surely controlled; and it has been used by many physicians, both as a local application to the pharynx and tonsils and administered internally. But, as might be supposed, and as experience has abundantly demonstrated, it is impossible to thus destroy the parasite without killing the host as well. Such, at least, has been the experience of the author of this paper; therefore it may be reasonably conceded that the internal administration of this remedy with the hope or expectation of arresting any disease of an acute infectious character, produced or increased by any of the micro-organisms, must from the very nature of the case prove fallacious.

Bichloride of mercury is an exceedingly valuable agent. Let us use it, but not abuse it.

GALL-STONES.

By R. H. Sabin, M. D., of Albany County.

September 27, 1887.

Gall-stones are hard concretions formed from acid bile. Some people have what may be called an acid diathesis, or tendency to run into an acid condition, and when in that condition the bile, which should pass off in a liquid state, deposits these hard concretions. They usually form in the gall-bladder, but may arise in the substance of the liver, or wherever bile is found. How they are formed from the ingredients of the bile is unknown. They are often composed of layers, sometimes inclosing a nucleus.

The earlier physicians accounted for the origin of gall-stones in a purely mechanical manner, attributing it to inspissation of bile; later, the cause was considered to be decomposition of the bile, and its coagulation by means of some acid. There may be but one stone, or there may be many thousand. They may be large, or small.

While they remain in the gall-bladder they give rise to little or no trouble, except sometimes an uneasy sensation in the right side; it is when they pass from the gall-bladder, through the cystic, hepatic, or common duct, that they cause distress. The pain is mild at first, sometimes felt in the right shoulder, sometimes in the left, but more generally in the region of the liver. There is often an urgent desire to defaecate, or urinate, but with partial or entire inability to do either. There is frequently nausea, and occasionally vomiting. The pain, which at first was slight, increases in severity till it becomes extreme agony, and if once felt, and its source proved by finding the stone, can never be mistaken. When the stone has emerged from the duct into the duodenum the

pain leaves as suddenly as it came on, and the patient is nearly as well as ever until another stone starts upon its passage. After the stone has passed into the bowel it gives no trouble, and is usually found, if looked for, in the faeces after the second or third evacuation from the intestine, when one or more may be discovered. The writer of this paper found thirty-nine after a severe attack which he endured, and it has not been an uncommon occurrence for him to detect from three to ten or more, having passed at different times from 300 to 400; wherefore he can speak from experience.

If the stone becomes impacted on account of its size, so that it cannot pass the duct, there is jaundice: its retention may farther lead to ulceration, and perhaps perforation into the abdominal cavity, producing peritonitis and death. Death may occur from shock to the system caused by the pain, but most cases recover.

In the treatment of this disorder there are two indications: One, to ease the pain while the stone is passing through the duct; and the other, to check the formation of the stones. The first is best accomplished by the use of morphia injections. From 5 to 10 drops of Magendie's solution, with the addition of ½ grain of atropia to the ounce, will generally relieve the suffering in fifteen or twenty minutes. Opium, chloroform, and other narcotics may be used.

The second indication, to prevent the formation of the stone, is best met by the administration of alkalies to neutralise the acid diathesis, spoken of in the beginning of this paper. For this purpose, I prefer the bicarbonate of soda. A tea-spoonful of the salt put in a glass of water and drunk during the day will induce an alkaline condition of the system in three or four days, and I very much doubt if a gall-stone will ever form while this condition exists.

DISCUSSION.

Dr. Sabin, after reading his paper, presented some specimens which, he said, represented an exception to the rule laid down in his paper. The specimens presented had the appearance of seeds, and had been pro-

nounced by the Secretary of the Association to be seeds of some kind. The patient, a woman about forty years of age, has attacks of billiary colic, with very severe pain. After the second or third evacuation from the bowels, she says that she can gather up handfuls of stones such as those presented. She has no doubt she has passed quarts of them. Dr. Sabin put some of them to soak, and they gave off a very offensive odor. In these cases he always found the urine in an acid condition during the attacks, and after the use of the alkali he found it alkaline, except in the case just spoken of. This patient's case was an exception, because even when her system was in an alkaline condition she would pass these small stones. It was the only case he had found which was not entirely relieved by the use of the soda. If the use of the soda is neglected, the gall-stones are likely to form again. After one attack he had found 39 gall-stones. In one case, where he had a post mortem examination, he found 105 stones, and in another 85.

The principal point to which Dr. Sabin wished to call attention was the alkaline treatment for gall-stones, which he thought to be the only true and effective treatment. Patients may be sent to Carlsbad, and drink Carlsbad water, or any of the other alkaline waters, and in that way the systen will get into the alkaline condition; but he thought the use of bi-carbonate of soda was better.

Dr. H. D. Didama, of Onondaga county, was very much interested in Dr. Sabin's paper. The week before he had seen a case similar to the one just related by Dr. Sabin. A physician from Central Square brought him a bottle of the same kind of biliary sand, small things looking like seed, round at each extremity, and all just alike under a small magnifying power. They were shaped like a peanut, only the depressions were deeper, relatively. A year ago some specimens of this kind were passed around Syracuse as marvellous gall-stones. In that case, and he thought in the case he saw the week before, the decision was that they were seeds. They were submitted to a botanist, and he pronounced them seeds. He thought this case need not discourage Dr. Sabin in regard to the alkaline treatment. Gall-stones in such numbers could not all be of the same size. No wonder these withstood the effect of the alkali. In regard to one of the symptoms, Dr. Sabin had stated that if the stone were impacted, jaundice would result. If it be inpacted in the cystic duct, jaundice is not produced; but if the common duct be obstructed, jaundice follows.

Dr. Briggs, of Monroe county, wished to add another case to the one reported by Dr. Sabin. The symptoms were similar to those described by Dr. Sabin, and the case appeared to him to be one of hepatic colic. It was attended by jaundice as well as by severe pain and chills. Shortly after this, on examining the stools, he discovered quite a quantity of sand. On putting some under a microscope he found they were nearly

all of the same size. One point which made him think they were not seeds was that they were united at various angles, and presented facets where they were broken apart.

DR. E. D. FERGUSON, of Rensselaer county, said he had no question of the fact that the articles presented by Dr. Sabin were seeds. Some one more familiar with botany than he had examined them, and had stated the source from which they came. He thought that generally in cases of this kind the ingestion of the material became habitual, and it became a case of malingering.

DR. LEALE moved that the specimen be submitted to the Microscopic Committee. The motion was carried.

The president appointed Dr. Leale a committee on this subject, to report Thursday morning.

A CONTRIBUTION TO THE STUDY OF HIP-JOINT DISEASE.

By NATHAN JACOBSON, M. D., of Onondaga County.

September 27, 1887.

An affection has been recognised by generations of physicians involving the hip joint, manifesting itself in a manner so characteristic that it has been termed by the English surgeon "hip disease," and by the American "hip-joint disease." No other joint is honored in this particular way; no other has been thought to exhibit a form of disease peculiarly its own.

The disease has, unfortunately, not been rare; opportunities for studying its pathology not infrequent. No country could boast of it as exclusive property. The most antagonistic views have been and are being expressed concerning its pathology and treatment. That any form of inflammation differing from that appearing in any other joint manifests itself in the hip is not true; that the hip joint is capable of taking on only one form of disease is likewise not the case. Acute and subacute inflammations occur here as in other joints. The name "hip-joint disease" is evidently unfortunate, as the impression it conveys of an unusual joint affection is unfounded.

At the recent meeting of the International Medical Congress, Mr. Edmund Owen read a paper on "Paracentesis of the Articulation in the Early Stages of Disease of the Hip Joint," which was based upon his success with this method of treatment in a case of but two weeks' duration. I assume that we recognise as hip-joint disease an affection which develops itself more insidiously and slowly; which has none of the local or general manifestations of an acute disturbance.

Hip-joint disease is a chronic affection, usually met with between the ages of two and fourteen.

All surgical writers of the past have taught that it is a strumous disease. Exactly what pathological state struma implies it would be difficult to define. Mr. Barwell tells us that it is a condition, usually inherited, which renders many of the tissues very prone to respond to slight sources of irritation, and, by prolonged inflammations, tending to suppuration and caseation.

Over twenty years ago, Villemin taught that caseous pneumonia was tubercular; Cohnheim and Fränkel, in more recent times, have maintained that any caseous deposit could awaken tuberculosis. Baumgarten, following up this line of study, says that caseation is the characteristic indication of tuberculosis. Scrofula is now defined as lymphatic tuberculosis. It is not remarkable, then, that men are hesitating as to whether they should not consider the so-called strumous diathesis a tubercular condition.

While most observers had agreed that hip-joint disease was dependent upon a contaminated constitution, Sayre has taught for years that this condition was the result, and not the cause; that the afflicted children sustained some injury while in the full enjoyment of health, and therefore that the disease was of traumatic origin. Howard Marsh sought to combine the two thoughts, and said that plus the strumous diathesis, there must be a traumatism to awaken the disease.

Since there has been a growing conviction that tuberculosis is an infectious disease, it has been maintained, particularly by the German pathologists, that the infection may find its seat primarily in the joints, and that hip-joint disease is an example thereof.

Rokitansky was the first to mention tuberculosis of the synovial membranes, but to Koester belongs mostly the credit of this theory. Volkmann, in 1879, Koenig and others soon thereafter, presented able monographs, setting forth that fungous and caseous conditions of these joints were unquestionably tubercular, and that purely traumatic synovitis never

becomes fungous. A little later Koch discovered the bacillus tuberculosis. Then careful examination was made for it in these joints. It did not take long to discover that the bacillus could not always be demonstrated. In many cases where tubercle could be seen macroscopically, the bacillus could not be found at all; in others rarely; and yet again in some abundantly. Mueller, Schuchard, and Krause, more fortunate than others, found two or three baccilli in eight or ten slides, and again none in twenty. Koenig felt obliged to say that the discovery of the bacillus did not answer all the questions in hip-joint disease; and Castra-Soffia, who failed to find the bacillus in nearly all his cases, concluded that inoculation furnished the only proof positive of the tubercular poison.

That tuberculosis is an infectious disease, most physicians are ready to admit; the infection is recognised to be the bacillus. This infection, floating in the air, can be inspired into the lungs, and, finding here a proper resting-place, awakens a diseased process. But how does it reach the hip joint? We are told that the assumption is warranted, that the bacilli are introduced into the blood current either from an existing collection in the body, or through the unaffected lungs or intestinal canal, and ultimately are deposited in the structures of the joint. Naturally we ask, If the bacillus be the materies morbi, why do we not find it constantly, and, indeed, abundantly?

If we are to regard the disease as tubercular, we must either be content to base our conclusions upon the macroscopic appearances, or search for some other explanation. Mueller found many characteristic tubercles without bacilli; but he discovered peculiar bodies resembling fat-globules, surrounded with very fine granules, which took on a deep violet stain with fuchsin or gentian. He asks, "May not these be related to the bacilli?"

There is yet another point not to be overlooked. Autopsies made upon people having succumbed to some acute disease reveal tuberculosis of bronchial and mesenteric glands, and

of the various organs which, during life, had not aroused the first suspicion of tubercular disease. Baumgarten says that he has found latent tuberculosis present as often as once in every three or four bodies examined by him, not including those who died of some recognised tubercular disease.

However we may explain these manifestations,—whether we agree with him or not that they are inherited, and, like syphilis, may lie dormant for years,—one thing to me does not seem improbable, that a tubercular focus may exist, manifesting itself in no way whatsoever, and which may be awakened into activity by traumatism.

Personally, I have never known a case of hip-joint disease to begin spontaneously. For although some did occur in families where tuberculosis was not unknown, in all was the history of an injury given. But, however occasioned, it is interesting to study its manner of progress. Sayre tells us that the disease may begin either as a synovitis or as the result of some injury to the ligamentum teres, which will be remembered to be the carrier of the blood supply to the head of the femur, or in the vessels of the articular lamella of this bone.

Volkmann, Koenig, Wright, and others state, that while we may have primarily a synovitis, it is usually only the result of the irritation of a preëxisting ostitis, or the accompaniment of general tuberculosis.

The examination of joints, after death has occurred from tuberculosis or marasmus, leads to most unsatisfactory conclusions, or, rather, to none at all. Joints have simply been opened, and no section of the bone has been made. Volkmann, in his classic work, already referred to, presents a long array of specimens, in every one of which he shows that in fungous disease of the joint there existed primarily an affection of the bone truly tubercular. This might be in the acetabulum, in the head or neck of the femur, or in the trochanter. Ordinarily it found its seat, as it does in pulmonary tuberculosis, at the apex, *i. e.*, near the articulation. This underwent caseation, during which time joint synovitis and

muscular rigidity arose from the irritation occasioned by the focus in the bone. Up to this time the joint proper could not be considered affected with tuberculosis; but the caseous nidus, liquefied, burrowed its way to the joint, and was discharged into it. Numerous foci might exist, and each proceed independently of the other. Or if, perchance, the focus was placed sub-periosteal or remote from the joint, the liquefied caseous matter might be discharged entirely extra-articular. But when rupture had occurred, the cartilage of incrustation became involved, and osteomyelitis aroused. The circle of disturbance beginning and ending in the bone was thus complete. Where the focus, instead of undergoing liquefaction, mortifies, a sequestrum forms. This was either found imbedded in caseous granulations, with numerous tubercles present at the point of contact, or surrounded by a membrane presenting a characteristic miliary appearance. As a result of the inflammation of the synovial membrane, fungous granulations appear upon its surface, and amongst them are scattered miliary and sub-miliary tubercles. While he does not deny the occurrence of primary fungous joint-inflammation, he considers it extremely rare, and met with almost exclusively in adults, and then usually it is secondary to synovial tuberculosis.

I dwell thus long upon these points, as they are the accepted views of all German pathologists and surgeons to-day. From the standpoint which Sayre has taken,—and his views have been pretty generally adopted by American surgeons,—the process is largely inflammatory. There results an interference with the nutrition of the joint. The ligamentum teres, with its blood-vessels, is destroyed, and necrosis occurs.

To more forcibly illustrate the clinical differences between, and the indications for treatment of, these hip-joint diseases, I will briefly present the histories of two of my cases.

CASE I.—Anna L., age four. Both parents living, and in good health. No family history of tuberculosis. An uncle, a cigar-maker, has chronic laryngitis and bronchitis. Her maternal grandfather is in poor health, but has no pulmonary disease. On the 13th of April, 1886, the child,

who was very active, but never robust, fell down stairs, and sustained a simple fracture of the right radius and ulna. She made a good recovery. During the following June, while away from home, she became lame, and complained of pain in the right hip. After some days she recovered, only to have the trouble recur in a short time. The attending physician called it rheumatism. Returning to Syracuse, another physician confirmed the diagnosis.

September 9th, 1886, I was called. At this time the child had had four recurrences. From the date of the second she had never been fully free from lameness. The limb was rotated outward, abducted, and apparently lengthened; the pelvis was tilted forward and downward; the muscles about the joint were in a state of rigidity. With the child resting supinely upon a hard surface, an effort to bring the right popliteal space in contact with the table produced a raising of the pelvis on the corresponding side. The right gluteal fold was faded out; the spine rotated to accommodate itself to the position of the pelvis; a blow upon the sole of the foot produced pain in the hip. Hip-joint disease in the stage of effusion was diagnosticated, and rest in the recumbent posture, with extension, advised. At first a weight of four pounds was applied. The child slept quietly, without shrieking in its sleep as it had done. In one week's time the weight was increased to six pounds. The limb began to assume a straighter position, and the muscles of the hip lost their rigidity. September 25th a weight of eight pounds was substituted. The child experienced no pain from the first. She was given cod-liver oil, but no other medication; and about November 1st,—not two months after the beginning of the treatment,—all evidences of joint disease had disappeared. Extension and the recumbent posture were continued until December 18th, 1886, when a Sayre's long splint was applied; this has been worn ever since. There has been no further return of the trouble; she enjoys excellent health, runs, plays, and is as active as ever.

CASE II.—Peter L., age twelve. Seen in consultation with Dr. Maas, of Syracuse, April 24th, 1886. The maternal grandmother died of tuberculosis pulmonalis; the father is vigorous; the mother pale and thin, though not sickly. One of her children was still-born; another had hydrocephalus and other evidences of rickets; two others are healthy. Examination showed the patient to be in the stage of effusion of hip-joint disease; he was poorly nourished, and very anaemic. It developed that in a scuffle with a playmate he had been kicked upon the hip. Extension with pulley and weight was advised at night, and during the day the lad was urged to be about in the air and sun, using crutches, and with the sound limb elevated, so as to maintain auto-extension for the diseased one. In the course of a few months he seemed to recover fully, and remained, the family thought, cured, until he received an injury in March, 1887. From this date until June 22d, 1887, when I was again

called, the symptoms had not only returned, but were much more intense than ever before. Extension had been tried, but to no avail; pain in the hip was of most agonizing character; his screams at night kept the neighbors as well as the family awake; moderate doses of morphia failed to quiet him. He could not lie upon his back, nor extend the limb, which was fixed in a flexed position. The slightest manipulation was extremely painful. The glands of the groin were enlarged; the trochanter major was very prominent, and appeared increased in size; there was no fluctuation at any point. It was evident that we were dealing with more than a synovial trouble. Afternoon fever, night sweats, painful, sleepless nights, had wasted him considerably, and he looked sickly enough. He had no cough. The lungs were examined. and Dr. H. L. Elsner, of Syracuse, makes the following statement of the pulmonary condition at this date:

"Physical examination of the lungs gave, on percussion, *both apices* duller than normal. Posteriorly on the *left* side, below scapula, and in the infra scapular region, a flat patch as large as a child's fist. Here and at apex, breathing cogwheeled and exaggerated; voice sounds modified at base, and increased; vocal fremitus also increased. *Auscultation: At left apex*, increased voice sound, fine crepitant râles, exaggerated breathing,—at some points broncho-vesicular breathing; at *right apex*, breathing as above, some moist râles,—crepitant aud sub-crepitant,—few sonorous and sibilant râles; *base*, bronchial breathing, increased number of râles, no cavities."

I advised immediate excision of the hip joint. Three days later, assisted by Drs. Maas, Elsner, Murray, and Sears, I performed the operation, making an incision after the method of Heyfelder. Having reached the trochanter, the muscles were severed, and the joint cavity opened. A large amount of curdled pus was discharged. The head of the bone was rotated out of its socket, and the shaft severed with a chain saw. The synovial membrane was trimmed away with a bistoury and scissors. The acetabulum showed limited caries in its centre, and was therefore treated with the Volkmann spoon. The whole was thoroughly cleansed with a bichloride solution, 1 to 2,000, dusted with iodoform, and packed with iodoform gauze. The outer wound was partially closed, and antiseptically dressed with iodoform gauze, borated cotton, and bichloride bandages. The boy was put to bed, a light weight attached, and the limb fixed in an abducted position.

Immediately after the operation, the exsected portions were placed in the hands of Prof. Newton A. Wells, of the College of Fine Arts, Syracuse University, and the accompanying plates portray most accurately the condition found. Plate I represents an anterior view. The synovial membrane, with its generous supply of dark red, at points almost melanotic, fungous granulations are plainly seen. A closer examination of

the membrane, when spread upon a black surface, showed additionally fine miliary, or perhaps, more correctly speaking, sub-miliary bodies, which of course could not be copied by the artist. In Plate II, the posterior aspect of the same segment, a better view of the head of the bone is obtained. At the point of insertion of the ligamentum teres, destructive ostitis is seen to have occurred; but at no other point upon the surface of the bone is there evidence of disease. Plate III, the inner aspect of the femoral head, shows clearly the extent of bone disease, and exhibits the cartilage of incrustation, discolored by contact with the joint contents, and its edge raised from the bone, as is seen also in Plate II. It was impossible for Prof. Wells to make a drawing of the transverse section of the bone for some weeks. During this time the specimen, kept in a chloral hydrate solution, had become considerably bleached; but Plate IV represents accurately the existing condition. The line of demarcation between epiphyseal cartilage and bone is well defined. The caries is clearly limited to the portion indicated in Plates II and III. There is no evidence of any other focus of disease, no fistulous track through which the caseous products could have been discharged into the joint. The cartilage of incrustation is seen raised from the bone.

The extensive fungous synovitis, the limited caries, and its restriction to the point of ligamentous insertion, speak very decidedly for a primary synovitis in this case. The subsequent history of this patient, though covering several pages in my note-book, can be briefly summarised A slight febrile reaction followed the operation. The boy was very nervous and emotional; his weak heart required support; but he soon rallied. Five days after operation he had his first coughing spell, apparently induced by laryngeal irritation, and, without much effort, he expectorated a few mouthfuls of bright red, frothy blood. This occurred three times during the evening. Aside from this he had no complication, nor unfavorable symptom. From the first there was no more pain in the joint, and, as a rule, he passed quiet, restful nights. There was no farther cough, excepting a slight hacking in the mornings. After the first week I never found the temperature above 100°, and the pulse would vary from 90 to 100. The first change in the dressings was made on the sixth day. There was no odor, and simply discharge enough to stain the bandages. Dressings of the same character as the first were renewed every fourth day. His appetite improved; he began to gain in weight; and from the time he resumed the cod-liver oil, the hypophosphites, and the bitter tonics, he was a different boy. The wound gradually filled up with granulations of a healthy character, and now but a short, narrow fistula remains. Extension was maintained for eight weeks. He sits up most of the day, moves his limb about, but has not yet placed it upon the floor. Since the 1st of August his temperature has been normal, but his pulse remains somewhat accelerated.

On September 12th, 1887, Dr. Elsner and myself made the last physical examination of the chest. Both apices had cleared up considerably; the right was free from dulness, and respiration almost normal. Posteriorly, on the left side, the area of dulness could hardly be recognised, and there was marked improvement in the breathing in the consolidated portions. In fact, so decidedly had the condition improved, that Dr. Elsner said,— "Had I seen him to-day for the first time, I should diagnose no lung disease, but should say there was present only thickening of the bronchial mucous membrane."

Dr. F. W. Sears, of Syracuse, made repeated examinations, after Ehrlich's method, of the portions removed, as well as of the pus discharged upon the dressings, and was unable to discover in any specimen the bacillus tuberculosis.

In the first case we undoubtedly had a form of hip-joint disease, the result of traumatism, which, beginning as a synovitis, did not awaken any farther pathological changes. Here physiological rest secured, as far as we know, a perfect cure. When patient number two was first seen, in April, 1886, there was no reason to believe that the condition was materially different. At that time there could have been nothing but a serous effusion in the joint. The same line of treatment, together with constitutional measures, secured, temporarily, an equally good result; but when a second injury awakened a recurrence of the affection, these measures failed. The synovitis had become suppurative, the ligamentum teres gave way, and a limited caries resulted from the interference with the vascular supply to the head of the femur. Had the disease been of osseous origin, there must have been more extensive disease in the bone, with the fungous disease of the synovial lining so pronounced.

But what shall we say of the relation between the joint and lung disease? Whether the pulmonary trouble was secondary to and dependent upon infection from the joint, or whether they were concomitant yet independent affections, must remain a matter of conjecture. That the condition of the lungs was largely influenced by the joint disease, I am certain. Perhaps it was only the relief from pain and the distressing symptoms occasioned by the diseased joint that

produced the marked arrest of, and permitted the early improvement in, the pulmonary affection; but there is strong reason for believing that the resection removed the source of infection,—the fuel that was feeding the flame. I regret that the caseous pus contained in the joint cavity could not be subjected to microscopical study; but, as it was lost during the operation, this was impossible.

These two cases are selected out of many to illustrate the different clinical and pathological conditions, and to introduce the question of proper treatment for the various cases of hip-joint diseases. As we encounter different degrees of synovitis, from the mild to the fungous,—changes in the bone varying from slight hyperaemia and localised foci to extreme destruction,—it is evident that no routine treatment can be outlined that will answer for all cases.

Two works have appeared very recently in England. In the one, Mr. Howard Marsh affirms that rest will cure any and every form of hip disease, and talks about prolonging the period, if necessary, for years. In the other, Mr. G. A. Wright is equally extreme in his views of the importance of operative interference, and particularly of resection. To follow either of these teachers to the letter, it seems to me, would be dangerous.

Case I is a typical example of that class for which the rest treatment is particularly desirable. But for this very class our German friends, led on by the thought that there must be in each some tubercular focus in the bone, have suggested various operative procedures. Under antiseptic or aseptic precautions, operations about the joints are, of course, robbed of many of the dangers that formerly surrounded them. If there were any way of determining the site of a tubercular deposit in the bone, it would be very proper to cut down upon it, and remove it with the spoon. Where abscess exists, the seat of the disease can be, at least approximately, determined. Here, operative interference would be justifiable.

Ignipuncture has been used extensively in the hands of Kocher. A blunt cautery blade, four or five centimetres long,

is heated to a cherry-red heat, and carried through the soft parts to the bone. It is done antiseptically, and usually without anaesthesia. If, perchance, you reach a superficial tubercular collection, there is no doubt that you destroy it. But failing in this, as is probably the usual fortune, a sharp inflammation is aroused, with the hope of inducing osteosclerosis. Kocher has not seen the favorable results observed by Richet and Juillard in old cases of fungous disease, but believes this method more suited to incipient cases. Where there is positively a tubercular element, suppuration is hastened, and he has been obliged to resort early to resection.

Lindner, Kocher, Luecke, and others have injected carbolic acid and tincture of iodine into the joint with the idea of destroying the infection and awakening reparative inflammation; but Hueter, who has used this treatment, believes that it is like pouring oil upon fire.

It seems to me that the mild and incipient cases can best be treated with rest and supporting medicinal and dietetic measures. Cod-liver oil is certainly indicated, and Bidder believes that a diet of albuminoids, fatty foods, and sodium compounds is of the utmost importance.

There are few men who will deny that excision is indicated when the entire joint is disorganised. But are we to wait for the formation of abscesses, the presence of fistulae, and the positive evidence of necrosis before exsecting? Case II answers this question very decidedly in the negative. When rest fails to relieve, the pain increases, and visceral complications develop, there certainly is every reason to operate without awaiting rupture of the joint capsule.

Recognising as we must that there is in this class of cases an infectious element, we are compelled to exsect before the infection is broadly disseminated through the system. While, as Billroth suggests, we must consider whether the general condition of the patient will warrant so severe an operation, we cannot help but recognise that without radical measures these cases must surely die. Italian, French, and German surgeons are quite unanimous in regarding pulmonary tuber-

culosis as rather an indication than a contra-indication for operation.

In 1872 Volkmann wrote,—"I only resect when I have reason to believe that the case would terminate fatally without operative interference;" and again, "It is therefore entirely incomprehensible to me how resection of the hip joint in children can be regarded as aught else than a dernier resort." To-day there are few men who operate earlier or more frequently. In the past it has been recognised that occasionally acute miliary tuberculosis has been awakened by the operation. In his inaugural thesis, published last year, Wartman reports its occurrence 26 times in 837 resections. Koenig has met the complication five times, but in 1884 wrote that in the preceding two years he had seen but a single case. This improvement he attributes to better methods of operation, antiseptic measures, and particularly iodoform, whose anti-tubercular properties are to-day under discussion. But the number who succumb is vastly smaller than that of those who avoid visceral disease by the operation.

To draw from statistics a statement of the results of resection for hip-joint disease is at this date impossible, for the most recent tables are obsolete. But after a few years, when care has been taken to record the experience of men who have been careful to remove not only diseased bone, but every vestige of fungous membrane, who have operated antiseptically and aseptically, we shall be able to reach some fixed conclusions, not only concerning the indications for and the results of resection, but also the value of other minor operative procedures.

At the meeting of the thirteenth German Surgical Congress, the various methods of resecting the head of the femur were considered, as well as the means of obtaining the most useful results; but this paper has already grown to such length that I cannot do more than refer to the reported transactions of this gathering.

That recovery from tuberculosis in any form is possible, is now an accepted doctrine. There is therefore no reason for

abandoning even those cases of hip-joint disease that are certainly tubercular.

We have reached a time when the true character of the various pathological conditions, grouped together under the name of hip-joint disease, can be more thoroughly studied; when the individual features of each should be recognised; when the value of conservative measures in some and aggressive procedures in others will be plainly indicated; when the worth of the various lines of treatment can be estimated, and the especial adaptability of each determined; when the causes of failure in the past can be appreciated and remedied. There is reason to hope that the not very distant future will find the profession a unit in its thought upon these subjects, and hip-joint diseases will be less dreaded as they become more amenable to treatment.

DISCUSSION.

Dr. E. M. Moore, of Monroe county, thought the paper was one that should not be passed without discussion. This disease had been the *bête noir* of surgery. There had been an opinion that it was a special disease, until within a very short period of time. No longer ago than in the Centennial meeting of '76, in Philadelphia, our foremost surgeon, Gross, insisted upon this with the greatest emphasis, and opposed the doctrines with reference to traumatic origin. That had been the trend of European opinion upon this matter, as was shown at the Medical Congress at Copenhagen. And yet he was not convinced, but still adhered with great tenacity to a belief in the prevalence of a traumatic origin. It would be idle to say, with reference to sickness or injury, that only one cause existed: there may be many: and that tuberculosis was the prevailing cause of hip-joint disease Dr. Moore did not believe. There was another point with reference to tuberculosis, in which he thought pathologists and physicians would bear him out: it might be a little doubtful, after all, whether there might not be conditions which favored the invasion of the bacillus from the outside, producing the lung disease where the origin was entirely of a traumatic character. He thought the evidence that consumption was traumatic perfectly plain in certain cases. If it were not traumatic, how was it that the scissors grinders, needle grinders, buhr-stone grinders, and miners were the ones who oftenest succumbed to tubercular disease? Why should they be especially singled out for the invasion of the disease unless there were something traumatic, which

gave an invitation, as it were, to the germs? The mining districts of Pennsylvania were filled with widows whose husbands had died of consumption. Dr. Moore recalled that in his own town, where buhr-stone making was a prominent industry, a patient of his astonished him by saying that under no circumstances should his son follow his own trade, giving as his reason that all buhr-stone makers died of consumption by the time they were forty years of age. This opened his eyes to the subject very early, and he had kept them open ever since, with a strong conviction that many trades laid the foundation for consumption in this way. If this were so, was it not more than likely that children, exhausted with hip disease following injuries, though of non-tuberculous parentage, should have tuberculosis from a traumatic origin, even if the bacillus is found? It was gratifying to learn, on the authority of Folkmann and others, that where the bacilli were found in very small numbers, the disease went on just as if they were present in large quantities.

Again: Through all these discussions, the two conditions of angular curvature and hip-joint disease were classed together as evidences of scrofulous or tuberculous character. It happened that there were many cases of hip-joint disease, and many more cases of angular curvature, which recover without suppuration. When there was suppuration, the microscope discovered the baccillus. The bacillus might enter after an opening was made; and even if it were there before, it would not prove tuberculosis. The majority of cases of angular curvature ended in recovery without suppuration, and the traumatic origin could be easily traced. Ashhurst stated that in an institution of which he had charge the proportion of hip-joint disease was twice as great among the male children as among the female. Why? Because boys are always in trouble, and girls are restrained—an indication of its traumatic origin.

With reference to the results, Dr. Moore could not give statistics from memory, but thought it would be generally admitted that since this plan of treatment by extension had been adopted, the number of recoveries had vastly increased. He commonly adopted Hutchison's method of putting an elevated shoe on the sound foot, and a leaden sole on the other. He was sure that his successes were greater than formerly. The configuration of the hip joint indicated the reason why this disease advanced with so much greater tendency toward suppuration than in other joints. When there is an injury to a joint, nature establishes contraction of the muscles for the purpose of keeping it still, under a general law. It happens that in this small joint, right in the centre of the body, the muscles are disproportionately strong, and hence, under her general law, which works well everywhere else, nature utterly breaks down by pulling too hard, and the process of extension simply overcomes this too great contraction.

DISCUSSION ON THE MANAGEMENT OF COMPOUND DISLOCATIONS OF THE ANKLE JOINT.

REMARKS INTRODUCTORY TO A DISCUSSION ON THE MANAGEMENT OF COMPOUND DISLOCATIONS OF THE ANKLE JOINT.

By E. M. Moore, M. D., of Monroe County.

September 27, 1887.

The excellent paper read before this Association during its last session, upon the general topic of dislocations of the ankle, was to me a matter of great interest, inasmuch as I have believed for a long time that the profession was in much doubt as regards the proper methods of procedure in the more grave cases—those that opened the joint cavity. The considerations, therefore, which will occupy our attention to-day are such as refer entirely to luxations that are known as compound. With the exception of the joints of the fingers, which are so often opened in connection with severe injuries of the hand, there is no joint where this condition is so frequent, in relation to the whole number of its class, as the ankle.

The questions that occur to me are numerous. Have we made any real advance since the period of Desault and Cooper? Indeed, may I not ask whether we have made much gain since the days of Ambroise Paré? Are not our methods inferior to those of Desault and Cooper? Has any experience justified our abandonment of their teachings, and the return to amputation, with its grievous result, as an easy solution of a difficult surgical problem? Have our modern

methods of wound management yet found a place in the treatment of these cases that gives assurance of gain in the ultimate results?

The paper of Dr. Brown has gathered up the facts with reference to the modes of the present among us. They seem to me to answer all these questions in the negative. After giving a description of a compound dislocation, Cooper writes thus, seventy years ago: "The first question which arises upon this subject is the following: Is amputation necessary in compound dislocations of the ankle? My answer is, Certainly not. Thirty years ago it was the practice to amputate limbs for this accident, and it was then thought necessary, for the preservation of life, by some of our best surgeons; but so many limbs have been saved of late years,—indeed, I may say, so great a majority of cases,—that such advice would be considered not only injudicious, but cruel. It is far from my intention to state that amputation is never required, but only to observe that in the greater number of these accidents this operation is unnecessary." After describing his method of treatment, he proceeds to give his reasons for dissenting from the common opinion with reference to the necessity for amputation, and he begins by quoting a surgeon, who, while he was travelling in the country, accosted him with this question: "What do you do with compound dislocations of the ankle? I have had a case of this kind, and I told the patient he must lose his limb. Not approving this advice, his friend sent for another surgeon, who said he thought he could save it. The patient placed himself under his care, and the man is recovering." Such experience confronted him when he made his inquiries general, which, connected with his own observations, led him to ask the question I have quoted above.

As I have had in two cases precisely this experience, I was induced also to ask whether we had made any real advance in the management of these cases since his time, and even if we have not retrograded. It seems to me that the modern treatment of wounds should enable us to take more

conservative ground than our standard authorities seem to advise. In referring to the writers of the present day, I find the matter indefinitely treated,—left, without much guidance, to the judgment of the surgeon, who, in the vast majority of cases, must necessarily be inexperienced. With most of them there is a strong bias towards amputation, as the only reliable assurance for the preservation of life.

Our great American authority, Dr. Gross, is very positive in his opinions. In cases of much contusion and comminution of bones, he says,—"The surgeon could not hesitate as to the course to be pursued. Amputation alone can save life, and should be postponed no longer than is absolutely necessary for the occurrence of the requisite reaction. The lesion is profound, and any attempt to preserve the parts would be worse than foolish." Nevertheless, he also says,—"When the injury is less violent, and the constitution sound, conservative surgery will often effect wonders, and is always worthy of a fair trial. When the ends of the bones protrude, excision will generally be the only safe course." He also says,—"The statistics of compound dislocations of the ankle joint, attended with extensive laceration of the soft parts, clearly show that as a rule the immediate amputation is the only safe practice. If the operation be postponed until the joint and the surrounding parts are invaded by violent inflammation, death will be almost inevitable,—the patient, if he survives the dangers of erysipelas, pyaemia, and tetanus, being gradually worn out by profuse suppuration, hectic fever, and constitutional irritation. Secondary amputation is seldom of any avail in saving life. Of fifty-seven cases of this kind collected in 1877 by Dr. Frank O. Farrell, of Indiana, nearly every one perished. In ten other cases, eight of which came under his personal knowledge, in which amputation was performed at periods of from ten days to six weeks, only two recovered." This is certainly a very strong showing in favor of amputation; but statistics are often delusive, and I cannot believe that the mortality should be so great.

Dr. Hamilton takes more conservative views, and in a general way speaks in favor of resection in a great majority of cases of compound dislocations occurring in large joints, which he regards as probably quite as safe as amputation. He says,—"Poinsot, who has collected eighty-two reported cases of immediate resection practised for compound dislocation of the ankle joint, found sixty-eight cures, ten deaths, and four secondary amputations, of which latter one was cured, two died, and the result in the fourth was unknown."

Dr. Ashhurst dismisses the subject with the following sentence: "Compound dislocation of the ankle is a very serious accident, and usually requires amputation, particularly when complicated with fracture, though in suitable cases an attempt may be made to save the limb by sawing off the projecting ends of the tibia and fibula. I have once succeeded in effecting a cure without operation by the continuous employment of irrigation." Referring to Dr. Andrews's article in Wood's Encyclopaedia of Surgery, he says,—"As to pure conservation, the majority of cases in which simple reduction has been practised have resulted disastrously by suppuration and caries, leading to pyaemia. Hence the precept has become pretty firmly established that primary amputation or excision should be performed. The perfection of antiseptic surgery has raised anew the question as to whether, by very thorough drainage with several large openings and daily carbolised injections, conservative treatment might not be more successful; but this question is as yet not settled. I am inclined to believe in the future success of this method, but it certainly cannot now be unhesitatingly recommended, from lack of experience. We could not usually expect from this conservative antiseptic treatment much better results than from excision; hence, unless much safer, the method would have little to recommend it."

As this may be regarded as the last word of the standard authors, I cannot feel that we have made any marked advance in the direction of conservation in this country.

In turning to our English authorities, we find them tending towards conservatism, but unfortunately not taking very clear and strongly stated positions with reference to the treatment of compound luxations of the ankle. In Holmes's Encyclopaedia, Mr. Holthouse says,—"It would be impossible to lay down rules for every case: each must be studied separately, and the means adapted to the circumstances present. If arteries are wounded and bleeding, they must be tied; if bones are comminuted, the pieces must be removed. Resection may be required in some cases and amputation in others. As a general rule, amputation is improper, and except under the circumstances to be presently mentioned, the preservation of the limb ought always to be attempted. Our first object therefore should be to reduce the dislocation by bending the leg on the thigh, and making extension and counter extension from the foot and thigh. Reduction having been effected, and the wound cleansed from dirt and other foreign bodies, the limb must be placed on a hollow splint with a foot-piece in such a position as admits of the easy application of dressings to the wound without disturbing the joint. Then a piece of lint may be laid on the wound, and kept wet by the dropping of cold water from a bottle or other apparatus suspended above it. Should the case proceed favorably, little or no other treatment will be necessary, unless it be the occasional administration of opiates to allay irritation and relieve pain. Some months, however, must elapse before the patient will be able to bear upon the limb, and however complete the recovery, the movements of the joint are not always restored. It was mentioned just now as a general rule that amputation should not be had recourse to in these accidents. Nevertheless, there are circumstances which justify and even demand this operation. Thus primary amputation may be advisable on account of the advanced age of the patient or the extensive laceration and contusion of the soft parts, especially if complicated with wounds of the blood-vessels or with extensive shattering of the bones. Amputation may likewise be

necessary some time after the accident, when the attempt to save the limb has failed through diffuse inflammation or sloughing of the soft parts of the foot and leg or consecutive haemorrhage, or on account of severe constitutional disturbance threatening the life of the patient."

These recommendations are certainly very conservative. They come back to the views of Cooper, from which the profession, even in England, had receded. Like him, however, Holthouse clings to reduction of the luxation as the first movement in a process that may require a marked change in its management as time goes on. Unlike Dr. Gross, he does not fear so much, but instead, except in cases obviously requiring primary amputation, prefers the secondary. He also advises the use of cold water, to guard against the dangers of inflammation. With reference to this, I fully concur with Poinsot, that, inasmuch as the laceration and contusion of tissue constitute the chief elements of danger in these cases, the reduction of the temperature would be likely to increase the dangers of gangrene. It is septicaemia that we have most to fear. In a vague way he also says that the complete recovery of the movements of the joints is not always attained. It cannot be believed that the movements of the joints are restored where there is suppuration from the whole synovial surface, nor even a good flail joint where reduction without resection is practised.

Mr. Bryant at once confesses that "the treatment of compound dislocation cannot be reduced to any definite rule. Each case must be treated on its own merits. In young and healthy subjects more may be attempted in the way of saving the joint than in the old or cachectic. When a small wound exists, operative interference is only exceptionally needed; but when a large one, with projection of the bones, it is a question whether the better practice lies in the reduction of the dislocation after cleansing the projecting bones, or in their resection. When the bones cannot be reduced by ordinary force, their resection becomes a necessity. When the bones are much crushed, their resection should always

be undertaken. Indeed, it is a general feeling in my own mind that in compound dislocations, as in compound fractures with a large wound, it is wiser to resect the ends of the projecting bones than to reduce them. Amputation of the foot should only be performed when the soft parts and bones are much injured, and the age of the patient or his want of power forbids the hope that a recovery with a useful limb can be secured. When the wound is only of a limited nature, it may be sealed at once either by lint soaked in blood, or, what is better, compound tincture of benzoin. Reports speak strongly in favor of washing out the joint in such cases with a weak solution of carbolic acid [1 to 40] and then sealing the wound."

Here we find Mr. Bryant leaning strongly towards conservation. He uses resection when the bones are much broken up, and if they project much. This is obviously on the general principle that the ragged ends should be got rid of, and that the smaller pieces might necrose. I find that Mr. Erichsen is more conservative. He says,—

The treatment of compound dislocations of the ankle joint must depend to a considerable extent upon the amount of laceration of the soft parts and the conditions of bones forming the arch of the joint. If the wound of the soft parts be moderate in extent, clean cut, and with little bruising and injury to the bones, an attempt should be made to save the limb. This is here done by the assiduous use of antiseptics. There is no class of joint injuries in which this method has been attended with better success than in these. Should antiseptics not be at hand, the case must be treated on ordinary principles, namely, by rest on a splint, the closure of the wound, and application of ice or cold evaporating lotions. In many instances this plan will suffice, and the patient will recover with a stiff but useful limb, the joint being only partially ankylosed. If, however, the bones be projecting and comminuted, and the soft parts extensively lacerated, the question of amputation will necessarily arise. In many cases the operation may be avoided by adopting the treatment recommended by Hey of sawing off the malleoli, removing the splinters of bone, cleaning the wound, bringing the edges together by simple dressing, and supporting the limb at the same time upon a McIntyre's splint. If the joint be still more seriously injured, the posterior tibial artery torn, or the foot greatly contused, and especially if the patient be aged and his constitution shattered, recourse should be

had to primary amputation. I believe that the disinclination on the part of surgeons to amputate in these cases, greatly owing to the strong expression of opinion by Sir Astley Cooper in favor of the attempt to save the limb, has in many cases been carried to such an extent as seriously to add to the patient's danger. Secondary amputation may be rendered necessary in consequence of gangrene, erysipelas, or extensive suppuration.

It is thus seen that Mr. Erichsen regards the effort to save most limbs injured by the separation of the ankle joint surfaces as the proper proceeding at first, but wars against attempting it in bad cases. In this, however, he merely repeats Cooper's warning. The extracts I have made from these standard authors, with whose writings we are all familiar, gives us a view of the surgical opinions of the day. They merely repeat what the profession has for a long time entertained, with a rather stronger bias on the whole towards conservation; but no very definite rules have been laid down by any one. Perhaps this is impossible; but I cannot but believe that we can approximate more nearly than the general statements would indicate.

One of the most earnest advocates of conservation is Poinsot. He has made a most elaborate study of the history of the practices of the profession down to the present time, quoting Hippocrates as employing expectation pure and simple. We know that the opinions of the Father of Medicine controlled mankind for a long time. Poinsot asserts that the first writer to object to his methods was Paulus ab Ægineta, who recommended reduction.

To ascertain what expectation might be in a compound dislocation of the ankle, I turned to the translation of Hippocrates's article on this topic by Francis Adams: "In case of complete dislocation at the ankle joint," he says, "complicated with an external wound, whether the displacement be inward or outward, you are not to reduce the parts, but let any other physician reduce them if he choose. For this you should know for certain, that the patient will die if the parts are allowed to remain reduced, and that he will not survive more than a few days, for few of them pass

the seventh day, being cut off by convulsions, and sometimes the leg and foot are seized with gangrene. But if not reduced, nor any attempts at first made to reduce them, most of such cases recover. The leg and foot are to be arranged as the patient wishes, only they must not be put in a dependent position, nor moved about. On no account is a bandage or compress to be applied. Certain of the dressings used in recent wounds are suitable in such cases, but those into which resin enters as an ingredient do not agree with them; for the cleansing of the sores is a slow process, and there is a copious discharge for a long time. It ought to be well understood that the patient must necessarily be much maimed and deformed; for the foot is retracted outward, and the bones that are displaced protrude outward. But the wound heals by thin and feeble cicatrices provided the patient keep quiet for a length of time; but otherwise there is danger that a small ulcer may remain incurable. And yet in the case we are treating of, those who are thus treated are saved, whereas when the parts are reduced and allowed to remain in place the patients die."

I have quoted this extract from Hippocrates not only for what seems to us a very strange method, but also to draw an inference which I wish to make use of farther on. The statements are very decided. He leaves no doubt of his belief. His marvellous acuteness of observation has detected the difference of result where there was a free drainage, which would result almost necessarily if the ankle joint was not reduced after luxation, and the extraordinary absence of it when the reduction occurred, even if the wound in the soft parts remained entirely open. The reason for this method of expectation is, I think, very obvious. Until the time of Ambroise Paré, amputation was a matter of horror to surgeon and patient. Expectation was carried out to its last consequences before amputation was undertaken. Limbs were allowed to drop off by gangrene when nature preserved the life of the patient. Haemorrhage was apt to be fatal at that time. But when the ligature came into use by Paré,

amputation became the rule, and prevailed with but occasional exceptions until the time of Desault, who became an advocate of the method by reduction. Still, even his authority made at first but little impression, and opinions have fluctuated until the present day. However, when the topic comes up in the various surgical gatherings in Europe, the trend is towards conservation. A little more than a hundred years ago, Hey, of Leeds, proposed resection as a method of relief to the closed condition of the joint when reduced, as well as a means of getting rid of irritating spiculae of bone. This method Sir Astley recommends as an occasional advantage where there is much fracture.

I have looked for the evidence of a proper method to be derived from statistics, and must confess to a great doubt of their value, as they are almost necessarily gathered from a variety of sources. The conditions are so different as regards age, habit, constitutional tendencies, that it is almost impossible to draw much instruction from them, inasmuch as the number of cases that fall under the observation of any one surgeon are not sufficiently numerous to draw satisfactory conclusions therefrom. The experiences of different men are certainly very dissimilar. Thus, Mr. Syme says that in the Royal Infirmary of Edinburgh, of thirteen cases treated without amputation only two recovered. He also declares that even in these cases of recovery the foot is of but little value. On the other hand, Sir Astley Cooper asserts that it is not only of great value, but that the joints of the tarsus and metatarsus acquire a certain degree of mobility, compensating for the loss of the ankle joint by ankylosis. Poinsot finds the evidence altogether on the side of conservation. His method is that of reduction in most cases, and resection of the end of the tibia and fibula, as recommended by Cooper in exceptionally bad ones, though not so extreme as to require primary amputation.

Before making any special recommendations, permit me to give my own experience and that of a friend. As a result of conservation, I will present a single case, with the evidence

of its success as shown by the cast of the foot, in the hands of a young surgeon in a village near my own residence,—Dr. P. Y. Udell. It has come so near an ideal result as to provoke the inquiry whether such may not be the rule and not the exception. The case, as he furnishes it, tells its own story. I have examined the foot carefully, and had the patient walk before me, which she does without limp, and, as she says, without pain or thought of anything wrong on her part. The shortening of the limb is compensated for completely by the tilt of the pelvis—a circumstance with which all surgeons are familiar. The plan of leaving the malleoli in place, and adapting the ends to the resected tibia and fibula, is certainly original. He was doubtful of the result, but thought the support would be an advantage if union would take place. I think it will be found that the lateral ligaments are stronger than the bone: I have found in some experiments on the cadaver that the bones were pulled apart by their great strength. In the five cases of compound luxation that have fallen under my observation, both malleoli were broken, and the fragments adhered to the astragalus. This circumstance seems not to have been thought of as having any bearing on the treatment. Resection is spoken of in a very general way: this is usually made on the tibia and fibula, but some authors have cut off the surface of the astragalus. Again: A few have resected the astragalus entire. This has been done when this bone has been broken. Most surgeons, however, consider this condition as a sufficient cause for amputation. In my own experience, I practised some years since resection of the astragalus three times, and reduction simply, twice. Before presenting this case, I will state my personal experience.

I have had five cases of compound luxation of the ankle. They were all in males, and all healthy,—the eldest a man of forty-five years of age; the youngest a boy of fourteen. The boy was thrown from a wagon which was drawn by a runaway horse, while turning into a gateway. The outer side of the foot struck the gate-post, driving the tibia and fibula

outward, breaking the latter about two inches above the joint, and also fracturing the internal malleolus. This produced a contused and lacerated wound of about three inches in extent, so that the astragalus could be turned out through it without any enlargement. I was thus enabled to resect the astragalus, although it was not fractured. I resolved upon this practice in consequence of the excellent result during the preceding year in a case of resection of this bone for caries. In performing this operation, however, there was but little injury done to the soft parts, for I merely enlarged an aperture already existing on the outer side, so that the gouge and forceps were competent to its removal piecemeal. Thus the least possible injury was inflicted upon the ligamentous apparatus. The suppuration continued for several months, but resulted in an admirable flail joint, with very free motion. This was the case of a young woman thirty years of age, who became quite heavy after the close of the suppuration, but who was able to fulfil the duties of a servant-of-all-work without pain. Encouraged by this result, I proceeded to remove the astragalus by seizing it with a pair of forceps, and dividing the union between it and the os calcis with a pair of pointed scissors. After its removal, the foot was held in place by securing it to the foot-board of a double-inclined plane. It was treated by poultices. The suppuration was protracted, but at the end of three months the wounds were closed, and very considerable motion was obtained. But the result was not what I had hoped to arrive at. It was not like the one I have just described as resulting from caries. The end of the fibula had been removed, which gave an opportunity for a sliding outward, which is always the tendency in these cases. The double-inclined plane at the end of a month was changed for side splints. The patient was an uneasy one, and, being at a distance from my residence, was seen only at rather longer intervals than was desirable. The bandages becoming loose, the tendency to slide outward was constantly present. Before recovery he was removed to his home in a neighboring city, and I at-

tempted to retain the foot in place by plaster of Paris bandage. However, when I saw him again, the sliding outward was still greater, in consequence of the subsidence of the swelling. Nevertheless, the foot has some motion at the ankle proper, and the compensatory one described by Cooper.

Another case of severe injury was that of a fireman on a locomotive, who had the luxation of the ankle resulting from its pressure between two projecting surfaces. The condition was one of extensive laceration and contusion of the soft parts, as well as comminution of the bones. The fibula was broken into several small pieces; the internal malleolus slabbed up for an inch above the articulating surface of the tibia; and the astragalus was broken. But the man was thirty years of age, and in a condition of high health. If the foot could be saved, even if deformed, it would be worth much delay. The fragments of bone were removed, and the astragalus resected. The dressing was at first by a fracture-box filled with bran. But this was so inefficient as a means of retention that at the end of a week plaster of Paris bandage was applied, with wide openings for the escape of pus and the application of dressings. These bandages were removed at times during the whole period of treatment. There was, however, a constant tendency to displacement of the foot outward. As the swelling would subside, it would be found that the foot moved a little in this direction. The result, however, has been a great gratification to the patient, who can walk with ease, and has a large motion of the flail-joint. He is perfectly able to earn his living, performing the same duties he was accustomed to before the accident.

The third case was a man forty-five years of age, who received his injury by a fall upon the foot. Both malleoli were broken, and the astragalus pushed through a wound on the outer side and driven into the ground. There was no other complication either of haemorrhage or of comminution of bones. The astragalus was resected, though not fractured, and the foot and wounded parts submerged in a bath of

warm water. I intended to carry out the treatment by warm water, pure and simple. But the difficulty of doing this, in consequence of the dependent position, even when as much raised as practicable, necessitated the use of bandages, and it unfortunately happened that the pressure of a bandage about four inches above the ankle became sufficiently great when wet to strangulate the limb. I was visiting the patient in consultation, and when I arrived on my second visit, three days afterward, I recognised the fact that gangrene was supervening up to the point of the bandage. Amputation was immediately made, and the man made a successful recovery.

Of the other cases I may say that they were seen in consultation after the foot had been brought back to its proper place, and after a severe surgical fever was raging. The attendants were very firmly convinced of the necessity of amputation, apprehending a fatal termination, so decidedly proclaimed by their authorities. But the subjects were healthy men in the prime of life. The conditions, however, were most unfavorable, from the inevitable pressure of swollen tissues surrounding the close-fitting bones. I recommended free drainage and confidence in the powers of good constitution. The events in both cases were very gratifying to the patients, although in one case the foot slid outward, probably aided by the traction of the peronei muscles. Ankylosis was the result in both. The foot of course was kept at right angles to the tibia. In one there was necrosis of the end of the tibia. The sequestrum was of course removed, and the result was a shortening of the whole length of the leg by about one inch. This patient was some distance from my home, and I saw him but a few times. The line of the foot with the leg was admirably well maintained. The advantage of this was very apparent by comparing the two. The shortening of the limb gave an easier walk, the ankylosis was bony, and the foot was free from pain after a certain period of time. About three years after the accident he came up to me in the street, with a cheery voice, desirous of showing off

his paces. And, indeed, it was a result gratifying to both of us, the step was so firm and the limp was so little. Whether he exaggerated his powers or not I cannot say, but in a triumphant voice he announced that he had that day walked eight miles.

The case that I now read is in the words of Dr. Udell:

September 3d, 1880, was called to attend Mrs. B——, who had sustained a compound dislocation of the ankle by being thrown from a carriage. Striking on the feet, the left foot was turned under, and both bones of the leg thrust through the soft parts on the outside of the joint, over the top of her boot, into the ground. On examination it was found that the inner malleolus was broken off obliquely, and the external squarely, from their respective bones, both fragments being retained in the joint by their ligamentous connections. The articular surface of the tibia was bruised and fissured, and gravel imbedded in it where it came in contact with the ground.

After etherising the patient, one and one half inches of the lower end of both bones was removed with the saw; the parts carefully cleansed with a two per cent. solution of carbolic acid; the bones returned into the joint; a drainage tube introduced to the bottom of the wound; the external wound approximated by suture; and the whole covered with a compress of absorbent cotton wet with the two per cent. carbolised lotion. The limb was then put up in a plaster of Paris dressing, and, when sufficiently hardened, suspended by means of a cradle, so that it swung clear of the bed. A fenestrum was cut in the plaster splint, so as to allow access to the wound, which was flushed out by syringing with the carbolised solution three times daily.

But slight pain and fever followed the operation. At no time was there much suppuration. The drainage tube was gradually shortened, and finally removed altogether at the end of four weeks. At the end of six weeks the external wound had entirely healed. The patient was not allowed to bear any weight on the foot for four months after the injury. Rubbing and passive motion were employed after healing of the wound. The object of removing so much of the tibia and fibula was to clear the fissured end of the tibia, and to place the joint and its surrounding tendinous structures at perfect rest, having seen in a previous case the ill effects of returning the bones into the joint without resection. The present range of motion in the joint is one half that of its fellow, and the patient can walk without any halt.

I shall not again resect the astragalus unless it is broken up, and if I do it will be with the intention of saving the foot, and I will remove the malleoli, of course.

In the absence of any large number of cases, in view of the marvellous experience of wound dressing of to-day, can we not with propriety recommend a rule of procedure that may be followed with a reasonable amount of safety? We must not only look at the matter of saving the life, but also at the utility of the limb. There are few persons who would not incur some risk for such a prize. If we believed in the results that Hippocrates asseverates, there could be but one opinion—amputation, of course. But we now do better. The advantages of resection of the tibia and fibula are numerous; the dangers are vastly lessened even without any distinctively antiseptic treatment. The free opening for drainage must diminish the dangers of absorption. The swelling incident to reduction presses the synovial surfaces against each other, and necessarily causes a great deal of suffering, and retains the decomposing pus in contact with these actively absorbing surfaces. Beside, we must look to the ultimate result of utility. It has been asserted by the advocates of amputation, notably Mr. Syme, as quoted above, that the foot is an incumbrance, painful, distorted, and much worse than a stump, especially if made after his formula. Cooper takes quite a different view, and asserts that a preternatural flexibility appears in the joints of the tarsus. In my cases I find much motion in the cicatrix where resection of the astragalus has been practised, and in the case of reduction, with loss of a portion of the tibia, great freedom in walking in consequence of the shortening of the leg. When the foot is kept at right angles with the leg, as it properly should be, if the leg be not shortened it is not easy to walk without a difficult rise, for the toes cannot be raised sufficiently from the ground. But, as in the case cited, there is much motion to be hoped for by the elongation of the cicatrix.

One of the greatest triumphs of surgery is the marvellous utility of the arm after resection of the elbow-joint. This flail-joint, as I have been in the habit of naming it, can execute all the motions of the normal one, if we are careful in

its training during the period of its perfecting. The case I have cited illustrates a possibility of a similar result in the ankle. Should we not then regulate our treatment with this end in view? Let us for the present leave out of consideration any complications such as may arise from rupture of the posterior tibial artery, proceeding with our plan even if there be a rupture of the anterior tibial. Also, leave out those cases where a great crushing force has compressed the soft parts as well as luxated the joint, which would almost necessarily produce grangrene. The most common cause of this injury is a fall from a height upon the foot, as jumping from a carriage when in quick motion. The foot coming in contact with the earth and then held, while the body is in motion, almost surely induces a spinal twist, which, with an inclination of the leg at an acute angle with the ground, produces the break of bones and rupture of soft parts. The end of the tibia is thrust into the ground. Two of these cases were from jumps from the carriage when the horses were running. Bad as such conditions are, they are not apt to produce much destruction by gangrene. Such a condition of the synovial membrane cannot be remedied but by suppuration, if reduction is attempted, no matter how much care we may use in cleansing or antiseptic dressings. But there are cases where there is only a rupture of the soft parts and ligaments, and the joint is barely opened and moderately displaced. There is not even a rent in the stocking. The malleoli may or may not be broken. Cooper and Bryant would in such cases not attempt any treatment, but employ reduction and quiet. Cooper was fond of the use of a thin piece of lint, which he hoped would dry and keep the rupture covered. I am sorry not to be able to present to you the details of a case in the hands of a physican who is now dead, where the wound was carefully closed in a cover of this kind, union by adhesion taking place, and the whole value of the joint fully restored. No antiseptics were used.

I am disposed to lay down a formula thus, for the cases of the mild character just mentioned: Let the clothing be care-

fully removed. At once apply a sponge with a bichloride of mercury solution 1 to 1000. With a lens inspect the part, to discover foreign particles, under these circumstances most likely to be lint. The tenacious synovia picks up at once particles of what it comes in contact with. These can be removed with antiseptic sponge held in antiseptic fingers. The edges can now be neatly apposed with fine sutures of carbolised gut, after the bones have been replaced. It is not absolutely necessary to use a splint of plaster of Paris, but I confess to my partiality to it on account of its immobility. A double-inclined plane is a very good appliance. But before its application the leg around for several inches should be shaved. I would then apply absorbent cotton, wrung out of a solution of the bichloride mentioned, and cover the surface, over which an antiseptic covering should be placed. This is a bid for adhesion, of course, though it is seldom to be expected.

But let us regard the more usual form, as described before. Let us assume that the malleoli are in place, as far as the astragalus is concerned, but broken above; the end of the tibia thrust into the soil. It is surely idle to hope that any amount of cleansing can prevent suppuration. The procedure, in my opinion, should always be resection, and, if the astragalus be not broken, only of the end of the tibia and fractured end of the fibula. From one half to a whole inch of the bone should be removed. Of course the most careful cleansing should not be omitted. The ends of the fractured malleoli should be joined to the bones above by catgut carbolised sutures, drawn through holes drilled in each end. This only for the sake of absolute apposition, which might be disturbed in the necessary handling during the application of the splint for permanent retention. The edges of the wound can be brought together, at what would be the upper part when the foot is at rest, while the lower is filled with a drainage tube. I should scarcely be satisfied with any appliance for securing the proper position except the gypsum bandage, with a large opening for the requisite dressing. That

the foot should be placed at right angles with the line of the leg need not be told to this audience. In consequence of the resection, this is easily borne. Where there has been reduction without resection, the position is painful by increasing the pressure upon the inflamed synovial surfaces. The surface of the wound and surface of the skin for two or three inches around should be covered with some antiseptic dressing, of which absorbent cotton, saturated with the bichloride solution, is to my mind sufficient.

The drainage tube offers an easy access to the depths of the wound, which should be washed by an antiseptic solution, of which carbolic acid may be the most safe, as well as sufficient. Let us suppose the progress favorable, the rise of temperature moderate, as well as the other constitutional symptoms. We have a right to expect union, commencing at the point of contact at the centre. The straight line of the saw-cut on the tibia applied to the convex surface of the astragalus at once comes in contact, while the surfaces on each side are to be filled by granulations. This condition permits the motion that is so often the result of the treatment by resection, and should be cultivated more early than is commonly attempted. The stage of danger is during the early period. When the granulations are filling up the spaces, change of position should be undertaken. This is my constant practice in the treatment of the similar condition of the elbow joint. A slight change in the angle of the foot toward the leg could be made every second day, so slight as not to disturb the process of repair. This can be carried on until the extension of the foot is as complete as that of the sound one. Slowly the foot can be carried down to extreme flexion. To accomplish this purpose, a splint hinged at the centre of motion and controlling the foot and leg can be substituted for the rigid plaster of Paris.

I cannot but believe that a successful result would follow as the rule from such a procedure. The danger of resection with these appliances can hardly be more than a Syme's amputation. The bone cut is the same, and is probably more

susceptible to the septicaemic infection than the synovial face of the astragalus. If, however, the case is showing a dangerous decline from excessive temperature and fever, with too copious suppuration, we have the resource of secondary amputation.

The old controversy that agitated surgeons during the first quarter of this century, with reference to the propriety of primary or secondary amputation, has been definitely determined on the side of immediate action. In no place is this more obviously proper than in the special injury under consideration, when demanded by its extent. Still, when patients have survived the first dangers, it is well known that secondary amputations are more successful than primary ones. In reaching for the great prize in view, some risks must be run.

But let us suppose that the conditions are not so favorable, the comminution of bones considerable, and the soft parts much lacerated and contused. There has been no doubt then of the propriety of amputation. Must this sad resource be the only one we have before us? My advice is still for conservation. The danger from bone comminution is comparatively trifling. The fragments must be removed; the resection may be two inches or more, instead of one inch, from the end of the tibia, and yet produce the most splendid result. The great danger comes from the sphacelus of soft tissues, especially if there is haemorrhage from an artery of some size. My experience in the use of warm water to preserve the circulation in injured tissues has been so different from that which I had before warm water as a persistent agent had been so generally employed, that I am constantly astonished at its efficacy. Even when I know that the tissue of a foot or hand is destroyed, I cannot always feel secure of my flaps at the point of election. I recall two cases of boys, over whose feet car wheels had passed, but not injuring the heel and ankle. But as this cannot be absolutely known, the proper method is obviously to amputate above the ankle. But the great superiority of the stump after

Syme's operation induced me to keep the feet in both cases in warm water for six days. In each of them a sufficient flap was secured. The dead tissue was defined, and without alarming symptoms. But it is with no desire to obtain a flap after gangrene should have supervened that I cite this experience, and I would not delay the use of the last resort a moment after the occurrence of gangrene. But it is the marvellous effect of warmth to save the vitality of injured tissues; and as this can be used in connection with the antiseptic measures, the case would be a bad one indeed where I would employ amputation as a primary measure.

The introduction of the foot into warm water necessitates a dependent position, and this is one to be deprecated. To avoid this inconvenience, an anterior metallic splint may be used for the first week, which, being raised from the bed, allows every convenience for the drip and avoids the painful droop of the foot. My habit in the employment of water for both the ankle and the knee is to envelop them with cotton, and then surround the whole with an elastic rubber sheet. Upon the top of the cotton the water can be poured from a pitcher or fountain syringe at short intervals, avoiding fluctuations of temperature. This water may be rectified with the bichloride of mercury, 1 to 5,000. If gangrene should supervene, a secondary operation can be made without the delay for the red line of separation. That there are cases of luxation so complicated with extensive laceration that no question of the propriety of amputation need be asked, is certain; but I urge the profession to lean to the side of mercy.

Much of the answer to the first question, "When should amputation be practised, and when should other methods be employed?" has in a measure been given. But I will enumerate the special conditions that have been supposed to indicate the necessity of amputation, even in the minds of those who are the most strenuous advocates of conservation.

1. The advanced age of the subject. If decrepitude and ill-health is the state of the patient, the reason is a good one; but otherwise it should not be a bar to conservation.

2. The extent and laceration of the wound. This has already been considered.

3. The difficulty of reduction. If resection is employed, this objection is idle.

4. The comminution of bones. Unless this extends to the tarsal bones other than the astragalus, it should not be a bar. But if these are injured, suppuration and injury of the foot would necessitate amputation.

5. The impossibility of retaining the bones reduced. This cannot occur with resection, though possible with simple reduction.

6. The rupture of large vessels, with extensive wound of the skin. There can be no doubt that this injury would tend strongly to gangrene. This would more likely supervene upon a dislocation of the foot inward. But the consideration of this complication has already been taken.

7. Gangrene of the foot. Amputation should follow this at once.

8. Excessive contusion. This should be treated with warm water and secondary amputation, if called for by gangrene or violent suppuration.

9. Exfoliation of bones. This would certainly be no reason for amputation, but only for removal of dead bone.

10. Excessive deformity of the foot. This has no place in the treatment proposed.

11. Tetanus. Proper, but usually useless.

As regards the second question, "If amputation is to be performed, at what point should it be made, to render the stump most useful, the risks to be encountered to be equal?" I have but little to say. It will be better given you than will be possible by me. But I must declare my preference for Syme's operation. The great advantage of taking most of the bearing upon the end of the stump is a circumstance that should not be lightly ignored. It is very likely that the severity of the injury may be so great that amputation of the leg should be decided on.

The other questions I leave, except as treated above.

QUESTION I.

WHEN SHOULD AMPUTATION BE PRACTISED, AND WHEN SHOULD OTHER METHODS BE EMPLOYED?

Discussed by U. C. Lynde, M. D., of Erie County.

I have chosen to answer this question, first, from my library, and second, from my experience. Malgaigne reports a case, treated by Rumsey, in which the astragalus was fractured horizontally, the superior portion maintaining its relations to the tibia and fibula, and with them being driven through a large wound in the soft parts. Rumsey removed this fragment, and reduced the dislocation. The patient recovered in three months. Bransby Cooper states that at Guy's hospital a large proportion of the cases of compound dislocation of the ankle joint terminate fatally. He then says,—"When the dislocation is complicated by laceration of the soft parts, comminution of bone, or rupture of blood-vessels, the necessity of amputation is obvious, and the surgeon should not seek to save the foot at the risk of the patient's life."

The first condition which this surgeon mentions and calls a complication, the laceration of the soft parts, is only a necessity in compound dislocations, and must occur, consequently, in every case.

The second which he mentions as a complication, comminution of bone to a limited extent, does not of itself really complicate the case.

The third is a serious complication, and if the blood-vessels are important, like the tibials, demands amputation. The directions given by this writer, however, if followed, will involve amputation in every case of compound dislocation of

the ankle joint. Holmes says that "As a general rule, amputation is improper." He then goes on to state that "Primary amputation may be advisable on account of the advanced age of the patient, or the extensive laceration and contusion of the soft parts; especially if complicated with wounds of the blood-vessels, or with extensive shattering of the bones." The advice given by this author to amputate because of the advanced age of the patient, no surgeon should follow. If all else be favorable, the foot should be saved. The chances of living for such a patient, with exsection, would be as good as it would be with amputation, if not better.

Erichsen believes that "The disinclination of surgeons to amputate in cases of compound dislocation of the ankle joint is owing to the advice of Sir Astley Cooper." He then says,—"Following Sir Astley's advice has, in many cases, been carried to such an extent as to seriously endanger the patient's life." Sir Astley's influence was fortunate.

Bryant says,—"The amputation of the foot should only be performed when the soft parts and bones are much injured, and the age of the patient, or his power, forbids the hope of a recovery with a useful limb." All of which is very indefinite.

Wyeth says,—"The ankle is exceedingly tolerant of surgical interference, and with strict cleanliness and antisepsis, amputation on account of compound or complicated dislocation will seldom be necessary."

Gross says,—"The ankle is not unfrequently the subject of compound dislocation, the wound in the soft parts penetrating the cavity of the joint, and affecting, perhaps, the principal vessels and nerves of the limb, at the same time that there may be violent contusions of the integument, and extensive comminution of the bones of the leg. In such a case, amputation alone can save life, and any attempt to save the parts would be worse than foolish." If this author wishes, as he undoubtedly does, to have his hypothetical case include all these extreme complications, there will be no one to doubt the wisdom of his conclusion, not even a layman;

for with blood-vessels, nerves, and bones severed at the ankle joint there would be left the skin (which has been violently contused) and the tendons only; and every surgeon knows that the tendons never wholly escape in a compound dislocation of this joint. But this author goes on to state, that "When the injury is less violent, and the constitution sound, conservative surgery will often effect wonders, and is always worthy of a fair trial." So it follows that in a given case, with violent contusion of the skin, and tendons more or less injured, all else destroyed at the ankle except a nerve or artery, the surgeon should try to save the foot. It is possible that this advice might mislead a layman, but it will never mislead a surgeon.

Andrews, in Ashhurst's Surgery, says,—"The precept has become pretty firmly established, that primary amputation, or excision, should be performed." He goes on to state that the question of simply reducing the dislocation has been raised, of late, in view of antisepsis, etc., but this belongs to another's field of inquiry. He concludes that "As exsection is nearly as liable to save the life of the patient as the most favorable amputation, the former, exsection, which saves the foot, should be preferred." A very wise conclusion concerning cases that no surgeon would, or should, think of amputating.

Agnew says,—"That the conditions that would render amputation after a compound luxation of the ankle joint necessary are a very extensive laceration of the soft parts, a bad state of the constitution, and a rupture of the principal blood-vessels. The latter lesion, the rupture of the principal blood-vessels, under any circumstances will be a sufficient reason for amputation." The author evidently means to state that a very extensive laceration of the soft parts will render amputation necessary; that a bad state of the constitution will render amputation necessary; and that rupture of the principal blood-vessels will render amputation necessary. To say nothing about the last, which is certain, how liable to mislead are the first and second, especially the second. If a

foot is to be amputated because of a bad state of the constitution, I fear many feet will be needlessly sacrificed. Whenever the local conditions are favorable for the preservation of the foot, if the state of the constitution be good enough for the life of the patient with amputation, it is good enough for the life of both with proper treatment. Grant this to be a case where perfect knowledge is unattainable, and then conservative practice should, with modern treatment, prevail.

Hamilton says,—"Compound dislocations of this joint, and such as are otherwise complicated, demand of the surgeon immediate amputation or exsection, the latter to be preferred whenever the condition of the limb affords a reasonable hope that the foot may be saved." The foundations for this "reasonable hope" are just what we are inquiring into.

To conclude my first method of answering Dr. Moore's question, I will state that ancient writers were agreed and definite in their advice concerning the treatment of compound dislocations of the large joints. Reduce, and kill; or leave unreduced, and let die. Primary amputation or exsection was not practised. These views, in the main, were held by surgeons for nearly two thousand years. After surgeons began to make primary amputations, they amputated for this dislocation pretty generally, until about the time of Sir Astley Cooper, who, with others, advised saving the foot by resection.

Of modern writers, a few have been specific enough to be of some value. Others, if they intended to commit themselves, have not succeeded; while no inconsiderable number have succeeded, plainly, in giving poor advice. In the consideration of the treatment of compound dislocations of the ankle joint from the light of my experience, I have divided these injuries into two classes. The first class includes all those cases in which the injury to the soft parts is limited to their laceration, more or less extensive, for the exit of the bones; while the injury to the bones includes fracture with or without comminution of the malleoli, articular extremity of tibia, and the astragalus, one or all. The second class

is a repetition of the first, with such complications as contusion, more or less extensive, of the soft parts, rupture of one or more arteries, or laceration of one or more of the nerves; one, two, or all of these in a given case. The first class, in which will be included a large majority of all the compound dislocations of the ankle, contains no case that should be subjected to primary amputation. The second class contains some cases that require amputation, and some that do not.

If the complication be of the first kind mentioned, viz., a contusion only, and that contusion be confined to one side of the ankle and do not cover a large extent of surface, we should not amputate, though we know that the parts which were contused will slough. We should hope by modern treatment to save both life and limb. But should the contusion be extensive, or on both sides of the ankle, and especially if the injury to the bones be severe, it will be the duty of the surgeon to amputate at once. Cases of the second class, in which the complication is a ruptured posterior tibial artery, and in which the injury to the bones is not extensive, should be treated conservatively. Should, however, the bones, including the astragalus, be comminuted, it would be proper to amputate. The same may be said of the treatment of a similar case of the second class, in which the anterior tibial artery has been ruptured. Should both the arteries be ruptured in any case, the surgeon should make a primary amputation. The evidence that these arteries have been wounded should be conclusive, and no treatment should be predicated on any other condition.

To the rupture of nerves, mentioned as one of the complications of the second class, surgeons generally pay little or no attention, and while no surgeon would with this complication alone, the case being otherwise favorable, determine upon an amputation, he would not doubt that the rupture of an important nerve, like the posterior tibial, might cause an unfavorable result in a particular case. Before the surgeon is influenced in his treatment, his evidence of this injury should be, as in the case of a ruptured artery, conclu-

sive. Having considered these complications separately, it remains to combine them, and to state that, as a rule, the combination of any two will require primary amputation. With all the safeguards that modern treatment has thrown around it, primary amputation is not entirely devoid of danger. Conservative efforts have not lost all their dangers. And though modern treatment has reduced, in a remarkable degree, the mortality of amputation and conservative efforts, as applied to the care of these injuries, it has not rendered, and it cannot render, either entirely free from danger. It is but fair to state, however, that it has done and can continue to do more toward rendering amputation safe, than toward rendering conservative efforts safe. While the former, amputation, is the work of a surgeon who can, from first to last, exclude all or nearly all sources of infection, the latter, the injury, takes place in an atmosphere of infection, and, as a wound, may be filled with infection before the surgeon sees it. Contusions, too, which cause the death of the parts contused, must remain a source of infection. The same can be said of a foot which mortifies.

But the surgeon should bear in mind that in the treatment of these injuries he is a long way from the body, and that if he fails to save the foot he has plenty of space in which to make a secondary amputation, and leave his patient with a stump fitted in all respects for the adaptation of an artificial limb. Neither should he forget that he is practising surgery in the latter part of the nineteenth century; and that if he resect when necessary, leave no spiculae of bone, make incisions, if necessary, for the escape of all exudates, freely use drainage tubes, irrigation, and antiseptics, he will seldom have to write a death certificate, though he fail to save the foot; consequently, if he is to err it should be on the side of conservatism.

QUESTION II.

IF AMPUTATION BE PERFORMED, AT WHAT POINT SHOULD IT BE MADE TO RENDER THE STUMP MOST USEFUL, THE RISKS TO BE ENCOUNTERED BEING EQUAL?

Discussed by JOSEPH D. BRYANT, M. D., of New York County.

The dangers to be incurred by the amputation; the usefulness of the limb with an artificial appliance after the amputation; the social status of the patient,—these, together with the extent of the injury of the soft parts, should be taken into account in determining the proper site for amputation, when it is required for compound dislocation of the ankle-joint. In my judgment, there are but two advisable situations for amputation following compound dislocation of the ankle-joint: (1) Syme's amputation; (2) Amputation at the junction of the middle and lower thirds of the leg. Which of these two ought to be selected is, I think, a matter that can be quite easily determined.

Syme's amputation should be selected in all cases when the vitality of the soft parts will warrant a reasonable belief on the part of the surgeon that a serviceable stump can be secured by the usual plan of procedure. If this plan be not practicable, by reason of a doubt as to the requisite vitality of the proposed flaps, then I believe that an irregular flap or flaps should be employed, and be taken from the tissues at either side of the joint, according to the circumstances of the case. If irregular flaps be necessary, they should be constructed always, when possible, with the view of being well nourished, and of sufficient length to permit of a movable cicatrix, which will not be subjected to direct

pressure while walking. The tissues of the inner and anterior regions of the ankle joint are more vascular, and consequently better nourished, than those of the regions immediately behind and in front of the external malleolus. The ill effects that formerly not infrequently followed the exposure of a cicatrix to pressure are now reduced to a minimum; in fact, I may say that with strict attention to the details of antiseptic surgery, supplemented by flaps of a proper length, no apprehension need be entertained from this source.

If a serviceable stump do not result from the employment of the regular method of Syme, or of its modifications, then the surgeon can avail himself of amputation at the junction of the middle and lower thirds of the leg. This course, it is true, may subject the patient to the liability of a second operation; but this fact alone should not bear weight in the mind of the conscientious surgeon who strives for the best final interests of the unfortunate maimed rather than a finite glory for himself. The advantages of Syme's method for those who, from financial stress, may be unable to provide themselves with an artificial limb for an amputated leg, are manifest already, or will be when it is seen that by Syme's method a serviceable peg-stump is provided. Moreover, the economy, comfort, and usefulness of an artificial appliance for a Syme's stump are all in favor of this plan of amputation. In my opinion, the comparative dangers of the two methods of amputation should exercise no especial influence in the selection of the method, provided strict antiseptic means be employed.

The especial advantages of amputation at the junction of the middle and lower thirds of the leg, when compared with an amputation of the leg below this point, relate (1) to the better shape of the stump; (2) to better nutrition of the flap. The proper shape of a serviceable stump in this situation is oval, in order that it may fit the better the outline of the socket of the artificial appliance. If the bones be divided just above the malleoli (supra-malleolar amputation), then the stump will not be oval, because the combined diameter

of the bones in this situation is greater than that at any other portion of the lower third of the leg, and will form a stump with a bulbous extremity. A stump with a bulbous extremity will require that the lower portion of the socket of the artificial limb be made correspondingly capacious in order to admit and contain it properly. This increased capacity will, it is plain to be seen, prevent the proper fitting of the socket to the portions of the stump for some distance above its bulbous extremity. As a result of this, the end of the stump will be caused to impinge with unusual severity on the sides of the artificial limb by walking, etc. The consequence of this friction can be easily conjectured. That the nutrition of the flaps of an amputation made at the junction of the middle and lower thirds of the leg is better than when it is made from any point of the leg below this, needs no mention at this time: the fact is well established already. The question of the difference of leverage between a stump made at any point of the leg below its middle third need not be taken into consideration at all, since in any instance there will be more than enough of this for all practical purposes.

In closing, the following conclusions are respectfully submitted:

(1) That a regular or modified Syme's amputation is the most acceptable amputation in compound dislocations of the ankle joint;

(2) That amputation at the junction of the middle and lower thirds of the leg should be performed in compound dislocations of the ankle-joint, when neither of the preceding plans is feasible.

It is proper to add that these conclusions are endorsed by a number of gentlemen who are engaged in the manufacture of prothetic appliances. They have observed the results of operations, and can measure their usefulness from a practical stand-point with greater precision than the most experienced surgeon, and among them there seems to be no question of the propriety of the deductions just stated.

QUESTION III.

SHOULD THE LUXATION BE MERELY REDUCED, OR SHOULD SOME BONY TISSUE BE REMOVED; AND IF SO, HOW MUCH?

Discussed by

FREDERICK HYDE, M. D., of Cortland County.

CHARLES W. BROWN, M. D., of Chemung County.

DR. FREDERICK HYDE.

[Read by Title.]

The answer to these questions involves a reference to the complications incident to compound luxations of the ankle joint. There may be an example of the lesion in which its reduction, after treatment, and results will vary but little from those in a simple luxation. Such would be an instance in which the wound into the joint had left the soft tissues in a condition most closely resembling an incision. In this case, their coaptation might be so perfect that, if followed by only slight inflammation, even if immediate union did not take place, primary repair of the sundered textures would ensue, requiring scarcely more time than in the simple form of the lesion, and with equally favorable results. Such a termination would imply the absence of all the forms of complication which, as a rule, are to some extent present in the dislocation in question.

The character and extent of the external wound in the soft structures; injuries of blood-vessels and nerves, as their laceration and contusion; the multiplicity of the bone fragments; the extent of injury to the deeper soft parts, as the periosteum, cartilage, synovial membrane, and ligaments,—

all these are factors of direct prognostic significance. Extremes of age of patients, constitutional disease, or the prevalence of infectious maladies in the vicinity, should govern the surgeon in his treatment of this injury.

In the compound luxation under consideration it is of much moment to bear in mind that its embarrassing complication with fracture of the bones belonging to the joint is of more pressing surgical importance than almost any extent of involvement of the soft coverings. We meet with examples in which our treatment will be required for compound fracture of the joint, as well as for coincident compound luxation. We should know whether there is merely a fracture of one or both malleoli, or whether the articular surface of the tibia is in two or more fragments; whether the astragalar surface is intact, or has been also broken; and in the latter case, if it be likely to be repaired sufficiently to become a resting-place for the tibia, as before the injury. We should consider the extent of textural lesion, the previous state of the patient's health, and, if it be found that morbid conditions have existed, whether they were of local or general nature.

It is a nicer question for the surgeon to decide to what extent he should remove loose fragments from the joint, than to determine upon the necessity of an amputation or resection. In some cases there may be greater or less mobility of one, two, or more fragments varying in size, including the articular surface of the tibia, or a portion of the astragalus, in the same case, with more or less injury to the joint coverings. When the fragments can be accurately or nearly coaptated, and the outer textures have not been so much injured as to deprive them of vitality, it has been the writer's practice for many years to adjust the fragments, close the wound of the soft parts as far as possible, immobilise the joint, and with light antiseptic dressings take the chance of reparation, always reserving in the prognosis the risk of an immovable joint. It is in this class of cases that the modern conservative treatment of the lesion in question has attained signal success, when compared with the older and more fre-

quent practice of amputation. Again: We may find that one or more of these fragments are actually displaced: what should then be done? They should be reduced; but if it be found that the articular surfaces cannot be kept in contact, and that ablation of the hindering part does not restore their coaptation, then they should be removed, as would be done in the case of any foreign body. The dressings for securing the retention of the fragments and of the wounded soft tissues should be simple, so that they can be easily opened and removed for frequent inspection during the inflammatory period of the case. Instead of boxing up the limb or covering it with unyielding splints, it should be supported by accurately applied cushion-like appliances, such as sand-bags, upon the sides of the joint and limb above and below, in order to permit close watching and modification of the support, according to variations in the degree of swelling or in the direction of the foot, always having respect for the muscular mechanism of the limb, which should be so placed as to preserve the equilibrium of the functions of flexion and extension.

Allusion has been made to lesion of arteries, which is a complication in this luxation never to be overlooked, since it may cut off the blood-supply to the injured textures. It is said that this condition is too rare to need attention; but we must remember how frequently fracture occurs in compound dislocation of the ankle, the different directions in which the fragments are driven, and how often luxation with fracture of this joint is caused by direct violence. We shall then understand how the larger as well as smaller arteries may be wounded and compressed by the driven fragments, as happened to the posterior tibial artery, causing arrest of the circulation, in a case which came under my care. In this instance, the luxated tibia, with a fractured malleolar fragment, had been carried backward, and the broken portion driven into the artery, serving as a plug to fill the breach, cutting off the supply to the structures below, and leaving but a scanty collateral circulation. Another example of

obstruction of the circulation in the posterior tibial artery was where the articular end of the tibia had been carried in the direction of the artery with so great force as to contuse it to the extent of destroying its contractile power, so that when the compressing fragment was removed no blood passed through the bruised portion.

To illustrate another form of complication, I subjoin a brief account of a case lately under my care.

J. O., aetat. 33, a healthy laborer, while working on a building fell twenty feet, striking mainly on one foot, upon uneven ground, thickly covered with pieces of waste timber, sustaining the following injuries: A lacerated wound opened into the ankle joint, with severe contusion of the tissues on both sides of the joint, greatest on the fibular side; a transverse fracture of the tibia two inches above the ankle joint. The lower fragment was broken longitudinally near its middle, the inner portion, including the malleolus, being carried inward, partly through the wound, and its articular surface quite separated from the astragalus, its upper part lying at an oblique angle with the tibial shaft. The wound of the soft parts did not quite extend to the line of fracture, but the articulating end of the fragment was entirely uncovered and outside of the wound. The outer fragment was completely displaced and thrust through the wound, though less bared and less oblique to the shaft than the inner piece. The fibula was fractured just above the wound, but had small communication with the latter.

In deliberating over this very untoward-looking case, the first idea which suggested itself to me was amputation of the leg; but finding that the circulation was not cut off, and that the articulating surface of the astragalus was sound, I concluded to reduce the luxated fragments of the tibia. These were replaced as accurately as possible, the wound antiseptically cleansed, the soft textures coaptated, leaving in two drainage tubes, one on each side of the joint, with light retentive supports so adjusted as to prevent mobility of the dislocated fragments. If these could not be kept in place, or if no effort at repair of the lesions should be manifested, I was prepared to amputate later. Reaction soon came on, with a temperature of 103° on the third day, and some delirium. The wound inflamed, and free suppuration ensued, with superficial sloughing of the bruised tissues. The drainage was thorough, preventing degeneration of the pus, or its burrowing in any part of the injured tissues. From the fifth day, for three weeks, the temperature varied from 99° to 100°. To condense the clinical history of the case: The bone fragments kept their places and united; the sloughing surfaces healed by granulation. When it was certain that the fractures had united, efforts

were made, moderately at first, to move the joint; and with patient and careful persistence in this course, after a few months slight motion of the articulation was obtained. After six months from the receipt of the injury the joint movements were quite free, and in a few weeks more he resumed labor, with but slight deformity of the joint.

Where there is a fracture involving only a portion of the articular end of the tibia, the rest of its articular surface remaining intact, and the luxated fragment protrudes more or less through the wound and cannot be reduced, the hindering textures should be divided; and if they are sound, and sufficient to cover the displaced bone, this should be reduced, and, if its articulating part fits accurately, the wound closed. But if the articulating surfaces of the fragments cannot be made to correspond, remaining even slightly apart, the luxated portion should be removed and the wound dressed, maintaining, if possible, the normal position of the foot, relatively to the leg, and bearing in mind that we are caring for a wound of the joint structures, with the loss of a part of the articulation.

Thus far, in discussing the question assigned to me, I have been obliged to allude often to the complications of the lesion under consideration. It has seldom happened to me to see a strictly uncomplicated compound luxation of the ankle joint. My own recorded cases show a much larger number of the local complications in fractures of the tibia, including some part of its shaft,—oftenest the internal malleolus,—than in any other single injury. Next come extensive lesions of the soft textures, and the prognosis is more unfavorable in proportion as the luxated bone has been thrust through the outer coverings with the more violence, involving the more important structures, as the arteries and nerve trunks. Either of these complicating lesions might be more hazardous to life than any form of ankle luxation involving less extent of important textures, and free from fracture. These complications, as well as those of more general character impairing the health, give the principal surgical significance to this luxation. When all these things are borne in mind, the individual case,

with its particular phases, will dictate to the surgeon the immediate and later treatment, which will prove more successful than if he were governed by any set of formulated rules. We never find in any given series of cases precisely the same complicating conditions, either in gravity or number. The case before the surgeon must suggest its treatment; he cannot restrict it to any arbitrary rule, but must devise his remedial measures in accordance with the exigencies to be met, holding himself in readiness to make such modifications in treatment as may be needed.

Is it said that we are incurring too great risk in our efforts to save the limb? My answer is, that my own records will show, from this conserving treatment, a smaller percentage of amputations with a corresponding increase in the number of saved limbs, and fewer deaths. Early as well as later drainage should never be omitted, for the retention of pus or ulcerous *débris*, deep or superficially seated, prevents repair, and increases the chances of pyaemia. The thorough drainage of suppurating joint wounds, following the luxation under discussion, and their antiseptic irrigation, have saved limbs that formerly would have been lost. Necrosed tendon, cartilage, and ligament are foreign material, and should be removed early.

DR. CHAS. W. BROWN.

If the displacement were considerable, and the laceration of the soft parts extensive, it would be safer to remove the portion of bone that protrudes through the wound than to reduce the dislocation without, as the removal of part of the bone allows the foot to be placed in its normal relation to the leg without farther injury to the soft parts than has already taken place, and admits of more thorough cleansing of the wounded joint. It relieves the tension of the parts, which is always a great source of shock or of painful inflammation; and when a part of the bone is removed, the pain, which is always very great, is entirely relieved. It also allows more perfect drainage of the accumulations in the cavity of the

joint, and, with antiseptic precautions and proper management, a flail joint, admitting considerable motion, and an useful limb may reasonably be expected when this plan is properly followed. On the other hand, if the dislocation be simply reduced without the removal of bone, with the best results obtainable it is liable to result in complete ankylosis of the ankle joint.

One of the most important questions connected with the management of these cases, and which should decide between an attempt to save the foot and amputation, is the amount of injury to the arteries. If the circulation be completely cut off, we can have but little hope of saving the foot, whatever the plan of treatment may be. If either the posterior or anterior tibial artery be intact, we may have reason to expect a favorable result by resection and thorough cleansing with antiseptic solutions, and dressings that will not permit the entrance of septic germs, and at the same time not produce undue pressure, but allow free drainage if fluids accumulate in the injured joint. Bone should be removed when it is protruding considerably, and cannot be returned to its normal position without further injury to the soft parts, or when a portion of the periosteum has been removed, or when the head of the bone has been crushed or broken. As to the amount of bone to remove in these cases, much should depend upon the nature of the injury, that is, the amount of bony tissue wounded, or denuded of its periosteum. In either case, as much as is injured should be removed; and, as a rule, the whole articulating surface should be removed, as this takes away the principal source of inflammation, and relieves the tension; and a better result will generally be obtained, and with much less danger of a fatal issue, than where the luxation is reduced without the removal of any bone. If the articulating surface of the bone be pushed completely out through the soft parts, the safest plan is to saw it off; but if the dislocation be not complete, and the joint simply torn open, the wound should be thoroughly cleansed, and dressed antiseptically, without the removal of bone.

Dr. John Ashhurst, Jr., in the "International Encyclopaedia," says,—"I am disposed to agree with Hippocrates and Celsus, that in cases of compound dislocation, immediate excision should, as a rule, be practised, except when the part involved is the knee, when amputation will ordinarily be preferable. I have, however, myself saved a case of compound dislocation of the ankle, without operation, by the use of continuous irrigation; and similar successes are occasionally met with by almost all surgeons. The great advantage of excision in these cases lies in its preventing the destructive inflammatory tension, which is almost inevitable when simple reduction has been effected."

As much time frequently elapses between the receipt of the injury and the first visit of the surgeon, the infiltration through the tissues surrounding the joint is considerable. The new order of things, brought about by the tearing asunder of the muscular fibres and the shortening allowed by abstraction of the bony support, produces a real shortening of the muscles, which it is impossible to overcome sufficiently to return the head of the bone to its normal position without breaking muscular fibres and doing more injury than has already taken place; and if, under these circumstances, the reduction be accomplished, the tension and increased infiltration go on, and the accumulations are imprisoned in the cavity of the joint, and the result is necessarily disastrous. On the other hand, if the head of the bone be removed, the reduction can be easily accomplished without further injury, and the injured parts are not kept on the stretch; drainage is free, and the limb, if placed in an easy position in a fracture-box and kept perfectly quiet, will be much more liable to do well than by reducing without the removal of bone.

QUESTION IV.

WHAT DRESSING AND AFTER-TREATMENT WILL CONDUCE TO THE BEST RESULT WITH LEAST RISK TO THE PATIENT?

Discussed by FREDERIC S. DENNIS, M. D., of New York County.

In responding to the question as to the dressing and after-treatment with a view to obtaining the best result in compound dislocation of the ankle joint, it is assumed that an amputation has been considered, and that the operation is not to be employed. The dressing and after-treatment must apply to those cases where an attempt at conservatism is to be made. In employing a dressing where conservatism is to be resorted to, a partial resection may be indicated in order to put the wound in a condition for aseptic healing. This naturally leads us to a consideration of two classes of cases: 1st, Those in which a partial resection is to be made; 2d, Those in which no operative interference is to be undertaken.

I. Those cases in which a partial resection is to be made. The foot, toes, ankle, and leg should be washed, scrubbed, shaved, and irrigated, preparatory to the examination of the wound. The preparation of the wound for the application of an antiseptic dressing is most important. In the majority of the cases of compound dislocation of the ankle joint, a fracture of some of the bones accompanies the injury. It is a cardinal principle to be observed, that primary intention will not follow in any case if loose pieces of bone or cartilage be left in the joint. It becomes necessary under these conditions to enlarge the original wound, to explore thoroughly the interior of the joint, and to make a counter-opening. The joint now can be carefully examined, and all loose

pieces of bone, or cartilage, or foreign bodies can be removed. The malleoli should be removed if fractured, and any loose pieces of ligamentous tissue, tendon, fascia, or muscle should be cut away, and the joint thoroughly irrigated with a warm solution of bichloride of mercury (1 to 4,000). The introduction of a red rubber drainage tube (red, because it contains no sulphur) forms an important feature in the dressing. The tube should be carried directly through the cavity in order to offer free drainage to this joint, the situation and the cavity of which are extremely unfavorable for complete drainage. Some surgeons believe that drainage can be adequately maintained by a large tube introduced through the original wound, and that a counter-opening is not only unnecessary, but that it also contributes an additional source of danger. In the many cases of compound dislocation of the ankle joint, I can recall at least a dozen in which an abscess developed upon the side opposite to the original injury. I believe that this complication will be avoided if counter-opening for drainage is made. These abscesses upon the opposite side of the joint have their origin in either retained foreign bodies, or pieces of bone, or shreds of necrosed tissue, or else in the imperfect method of drainage, which permits retention of the secretions in the most dependent portion of the joint cavity. The small wound for the tube is insignificant when the joint is widely opened by the original injury. The drainage through the joint affords ample opportunity for egress of all the secretions, and at the same time permits free irrigation through the articulation at a subsequent dressing. The introduction of the tube through the joint cavity will not affect the future mobility of the articulation; but an abscess occurring at a point opposite, having its origin in retained secretion from blood, lymph, serum, and synovial fluid, will seriously impair the mobility of the joint.

I have at the present time three cases under observation where abscesses have been formed upon the side opposite to the original injury, and I believe these abscesses might have

been prevented by a counter-opening. I have a number of cases in which no counter-opening was made, and yet no abscesses have formed; but I feel confident that it is best to avoid this risk, especially when no additional danger ensues from the counter-opening.

If now the joint is perfectly free from all extraneous matter, and has been fully irrigated and the parts in the immediate vicinity are clean, new wet towels wrung out in bichloride of mercury should surround the parts and the dressing applied. If, in the reduction of the dislocation, or in the retention of the joint in its normal position, any resistance be offered by contracted tendons, they should be subcutaneously divided. This ensures physiological rest to the joint during the repair of the wound, and assists also in completely immobilising the joint. The surgical dressings, including the splint, which are to be applied, must necessarily depend upon the special circumstances arising in each case. The question of fracture with the dislocation, the fact of great laceration of the soft parts, the size of the wound, the amount of damage to the joint surfaces, the age of the patient, and other conditions, must influence the surgeon in his selection of a suitable dressing. No rule, universal in its application, can be laid down to cover all of these cases. In the majority of instances I believe plaster of Paris bandage should be employed. The lateral splints with foot pieces at right angles are objectionable in the severe forms of dislocation because they offer no support posteriorly, and a backward displacement is apt to occur. In recommending plaster of Paris, either in the form of a bandage or by the Bavarian method, I am aware of the possible dangers arising from its use. These dangers are obviated by a careful inspection of the foot from time to time. The danger of having the bandage too tightly applied can be prevented by the use of the elastic cotton, in the manner to be presently described.

If the wound be neatly closed by catgut, and the tube be free from all clots, a final irrigation should be made over the foot, and iodoform sprinkled over the wound, and over the

front and sides of the ankle a thin strip of iodoform gauze should be placed. This should be bandaged to retain it in its position. A wet bichloride bandage of double fold should now be wrapped around the foot and ankle and leg, and over this a piéce of combined dressing should be applied. A layer of borated cotton should now be placed over the entire dressing, and held in position by a bandage which has been soaked in carbolic acid or bichloride of mercury solution. Over this dressing plaster of Paris can be snugly applied, the dressing underneath affording ample elasticity to prevent constriction of the joint from inflammatory swelling. In conjunction with the plaster some strips of perforated sheet iron should be employed upon both sides of the leg, as well as one upon the front and another upon the back of the leg. The two last splints of perforated sheet iron should be bent so as to extend in front and behind the foot. The perforation in the strips prevents any slipping, and these four strips add great strength to the splint. The leg, after the splint is dry, should be suspended in a Salter's swing or in Fluhrer's apparatus, so as to allow the patient every freedom of movement in bed, but at the same time to make the leg and foot perfectly immobile. At the expiration of three days a fenestrum should be cut over the site of the drainage tube, upon both sides of the joint, and the tubes can be withdrawn, under continuous irrigation, at that time or a few days later. The removal of the tube must depend upon the character and extent of the damage to the joint. The conditions of free drainage, perfect asepsis, and complete immobility are thus secured, and healing by primary intention should follow. The advantages of the plaster splint or bandage are,—

1. Complete immobility.
2. Freedom of the patient to move in bed.
3. Dressing of the wound without disturbing the joint.
4. Uniform and equable compression to prevent serous infiltration.
5. The comfort of the patient during healing, and convenience to the surgeon in the after-treatment.

II. Those cases in which no operative interference is to be made. If the wound be very small, and no *débris* have entered the joint, and the luxation be only partial, no fracture existing, and the soft parts not being contused, it is not necessary to lay wide open the joint and to drain by a counter-opening. The limb, including the foot, should be disinfected, the joint washed out, the tube introduced, and then the same manner of dressing employed as in the more severe case. In these compound dislocations with but little injury and no fracture, continuous irrigation of a cold antiseptic fluid can be employed with great advantage. I have seen beautiful results follow this method, but I believe the cases are very limited where such a method can be employed. Leeches have been applied during the inflammatory stage in conjunction with the irrigation.

The results which have followed the treatment of compound dislocation of the ankle joint are not so brilliant as in some other injuries of a similar character. The results are uncertain, and not uniform. I have seen cases of insignificant wound terminate fatally, and again cases with very severe injury result in a perfect restoration of the function of the joint. The uncertainty of the results depends in a large measure upon the character of the injury, as well as upon the age and the constitution of the patient and the hygienic surroundings.

The best dressing, in my judgment, is the plaster of Paris bandage. This splint, in conjunction with free drainage, the perfect irrigation and proper preparation of the joint for aseptic healing, are among the things which contribute to the best results. The subject of dressing and after-treatment can be summed up in the following words: Careful preparation of the wound and joint, thorough irrigation, perfect drainage, tenotomy in suitable cases, and complete immobility.

DR. W. H. CARMALT, of New Haven, Conn., was very much interested in the discussion of this important class of injuries, and especially in the reports of the remarkably good results obtained by Dr. Moore after a

conservative method of treatment, and, in view of such results, felt that the procedures so lucidly explained should certainly be tried before sacrificing a limb in obedience to the teachings of the surgeons of the earlier part of the century, and of so many of our text-books still. He did not understand why Dr. Bryant had ignored Pirogoff's operation in the discussion of the modes of amputation;—was it because the stump was not adapted to a prothetic apparatus, or was there something objectionable in the stump itself? Dr. Carmalt's experience, as far as the stump itself was concerned, was in favor of Pirogoff's rather than Syme's operation, but he was not sure with regard to the adaptability of the artificial foot. He wished to endorse in the most forcible manner the rule advanced by Dr. Dennis in relation to a counter-opening for the drainage tube: the advantage gained was out of all proportion to the slight injury inflicted.

EXUDATIVE CONJUNCTIVITIS.

By Alvin A. Hubbell, M. D., of Erie County.

September 27, 1887.

[Read by Title.]

Conjunctival exudations have been observed for many years in some parts of Germany, but in England and the United States their occurrence has been comparatively rare. J. Soelberg Wells[1] stated that he had never met with a case in England of "true diphtheritic" conjunctivitis, but had seen many cases in Von Graefe's clinic in Berlin. Carter[2] admits its prevalence in Germany, especially in Berlin, but says he believes it to be "wholly unknown in England." Others, however, have observed "diphtheria" of the eye in England and other parts of Great Britain, and have reported undoubted typical cases, even such as have been common in some parts of Germany, of which the earliest and most complete description was given by Von Graefe.[3]

Pritchard,[4] in 1857, stated that he had seen nine or ten cases of acute conjunctivitis in which "fibrin had been effused, of the same physical characters as that effused in a recent case of pleurisy, which had adhered to the lids, and when unchecked by treatment had spread over the surface of the globe and destroyed the sight." He gives the history of one case occurring in connection with scarlet fever, other members of the family having diphtheria of the throat.[5] Johnathan Hutchinson,[6] in October, 1859, recorded a very marked and severe case.

1 "Treatise on the Diseases of the Eye," third Am. edition, 1880, p. 76.
2 "Practical Treatise on Diseases of the Eye," Am. ed. by Green, 1876, p. 231.
3 "Von Graefe's Arch. für Ophthal.," 1854.
4 "British Medical Journal," 1857, p. 961.
5 See Mason, "Royal London Ophthalmic Hospital Reports," vol. vii, p. 167.
6 "Royal London Ophthalmic Hospital Reports," vol. ii, p. 130.

Since then numerous cases have been observed in Great Britain by Fredrick Mason,[1] Samuelson,[2] Nettleship,[3] Tweedy,[4] A. Critchett and H. Juler,[5] J. E. Adams,[6] Hogg, Streatfield, and others.

To show the comparative frequency of this disease in different countries, I will quote from the excellent work of Ernst Fuchs.[7]

Country.	Town.	Author.	No. Patients.	Per Thousand.
Germany	Königsberg.	Jacobson.	10,000	6.2
	Berlin.	Hirschberg.	21,440	2.0
	Berlin.	Schöler.	10,000	0.6
	Düsseldorf.	Mooren.	108,416	1.1
	Leipzig.	Coccius.	7,898	0.2
	Heidelberg.	Becker.	7,547	1.2
	Stuttgart.	Berlin.	9,827	1.2
Holland	Utrecht.	Donders.	3,000	2.3
Austria	Vienna.	Adler.	12,000	6.2
France	Paris.	Fiéuzal.	34,577	0.4
England	London.	Moorfield's Hospital.	22,130	0.2

American statistics of this disease have not yet been collected. It is, however, rarely seen, and practitioners here have written very little upon the subject. Landesburg[8] has contributed an article, and Knapp[9] has reported two cases, with remarks upon the disease. Alt[10] has recently recorded nine cases.

It would appear from Knapp and Alt that in New York city and vicinity it is much more frequent than elsewhere in

[1] "Royal London Ophthalmic Hospital Reports," vol. vii (Nov., 1871), p. 164.
[2] "Transactions International Medical Congress," 1873, p. 127.
[3] "St. Thomas Hospital Reports," vol. x, 1880.
[4] "Lancet," 1880, vol. i, pp. 125, 282; and 1882, vol. i, Jan. 7.
[5] "Transactions Ophthalmological Society of the United Kingdom," vol. iii, 1883, p. 1.
[6] "Royal London Ophthalmic Hospital Reports," vol. x, p. 211.
[7] "On the Causes and Prevention of Blindness." London: Baillière, Tindall & Cox. 1885, p. 171.
[8] "Medical Bulletin," Philadelphia, vol. iv, no. 5.
[9] "Archives of Ophthalmology," vol. xi, 1882, p. 1.
[10] "American Journal of Ophthalmology," vol. iv, 1887, p. 41.

this country. Knapp says that Dr. Born, during his three years residence in the New York Ophthalmic and Aural Institute, collected notes of seventy well marked cases, and that mild cases of "croup" of the conjunctiva are not infrequent in his practice. Dr. Alt says he has seen at the same institution sixteen cases. Green[1] stated, in 1876, that he had never seen but one case, and that not very well marked.

Thus it is generally conceded that exudative inflammation of the eye in any of its varieties is very uncommon in this country; and this, too, has been my own experience. Among several thousand eye patients seen by me during the past ten years, I have met with only seven cases. I will give the history of one of these cases in detail, and the others I will refer to only in brief.

On April 7, 1886, I was called in consultation by Dr. S. G. Dorr, of Buffalo, to see Nellie R., aged one and one half years, who had been sick a few days with febrile symptoms, and had a rash resembling that of scarlatina. She had also had trouble with the right eye for three days, which was at first considered to be purulent conjunctivitis. The doctor had prescribed suitable remedies for the general condition, but the eye continued to get worse.

At this visit the child was feverish, very restless, and the eruption on the skin and the strawberry appearance of the tongue were like those of scarlet fever. The throat was normal in every respect, and there was no manifest disease of the upper air-tract at any part. The left eye was healthy, and the right presented the following appearances: The lids were much swollen, tense, shiny, and red; the swelling extended considerably over the right side of the face and across the nose; the upper lid seemed elongated vertically, and projected over the lower lid, to which it was apparently adherent. The parts were very sore and tender, and the child was given chloroform to facilitate further examination. Anaesthesia having been induced, the lids were found to be very stiff, and where the edge of the lower lid was in apposition to the inner surface of the upper they were more or less adherent. They were separated with some difficulty, and with a lid elevator the upper one was lifted and turned out a little, when it was found that the upper and the lower lids were firmly glued to the eye-ball by the exudation, which had taken place from both the palpebral and ocular portions of the conjunctiva in their whole extent, and consolidated the surfaces in contact into one mass.

[1] "Carter's Practical Treatise on Diseases of the Eye," Am. edition, 1876, p. 282.

The cornea, which was exposed with great difficulty, was free from exudation. It was clear except in its extreme lower part, where it was cloudy. The lower lid was forcibly detached from the ball for a little distance, and the exudation was found to be of considerable thickness, and firm, and evidently had thoroughly infiltrated not only the ocular and palpebral conjunctiva, but more or less of the tissues beneath. While the lower lid was apparently adherent to the ball throughout, the upper was free for some distance from the margin, where it projected over the cornea and lower lid, and only adhered above the cornea and toward the retro-tarsal fold. No effort was made to break up the adhesions above. The exudation, as seen on the free portion of the conjunctiva of the upper lid and the detached portions of the lower, was of a color and appearance resembling wet chamois leather. It was tough, could not be wiped away, and there was no haemorrhage when torn. The discharge from the eye was not great, and was watery and straw-colored.

The treatment advised consisted in frequent cleansing of the eye (every half hour) with one part of corrosive sublimate to 5,000 of a saturated aqueous solution of boric acid, and the constant application of compresses to the eye, kept wet with the same. The left eye was protected by being covered with a compress of absorbent cotton, covered and held in place by a bandage. The patient's head was also kept inclined to the affected side, so that the secretions and wash would not gravitate toward the sound eye. Internally, Dr. Dorr prescribed remedies principally to keep the child quiet. I was requested by the doctor to continue with him in the case, and I therefore watched its progress and aided in the treatment to the end.

April 8, the condition of the parts was unchanged, except that there was more swelling of the lids and face. The treatment of the previous day was continued, and to this was added the introduction of powdered boric acid, as much as could be contained, into the palpebral fissure, on the cornea, and as much as possible beneath the lids. This was repeated as often as the powder became dissolved, the parts being previously cleansed each time with the bichloride and boric acid solution.

April 9, the cornea was as clear as when I first saw it. The face and lids were still more swollen, and the tissues of the lower lid seemed more infiltrated with the exudation. The skin of this lid was also vesicated, the vesication extending downward from one half to three quarters of an inch from its margin, and one and one half inches transversely and outwardly from near the nose. The parts were very tender, and evidently painful, as the child was exceedingly restless, except when under the influence of narcotics. The secretion from the eye continued watery and yellow. The fever and rash were yet well defined, and the fauces were normal. The left eye was still unaffected, excepting that the lids were puffy from the extension of the swelling from the opposite

side. The protective covering was kept applied, and the treatment continued as before.

April 10, the lower eyelid showed a deposit of the exudation externally at the site of the previous vesication; and at about one third of an inch from the margin of the lid and toward the nose there were indications of breaking down of tissue and sloughing. The general swelling was about the same, and the corneal haziness had not increased. The treatment was not changed.

April 11, the exudates of the conjunctiva seemed to be softening, the secretions were more purulent, and the lids were beginning to loosen from the eye-ball. Pus was also discharging from the outside of the lower lid from a slit-like opening three quarters of an inch long, extending outwardly from the nose, parallel with and about one third of an inch from the margin of the lid. The lids and face were a little less swollen. The powdered boric acid was continued as before beneath the lids, on the cornea, and externally over the affected parts. The bichloride and boric acid solution was now used only for cleansing the parts, which was done every hour or two.

April 12, there was less swelling, exudates were clearing away in places, adhesions were giving way, and the discharge, which was purulent in character, was free both from the conjunctival surfaces and the sloughing part on the outside of the lower lid. The same treatment was continued.

April 13, the patient and the eye were decidedly better. The lids were no longer adherent to the eyeball, were still less swelled, the conjunctiva was becoming clean, there were no ulcerative processes, and its epithelium was reäppearing. Pus continued to discharge as before, the cornea was unchanged, the rash had disappeared, and the patient was in every way comfortable.

From this time on the eye improved rapidly, and by the 17th the exudation had nearly all disappeared, the conjunctiva was assuming a normal appearance, the haziness of the cornea was clearing up, and the lower lid was healing externally. By the 19th, the epithelium of the conjunctival surfaces had completely re-formed, and ulceration of the conjunctiva, contrary to my expectations, had not taken place. With such an amount of exudation and undoubted destruction of epithelium as existed in this case, I am still unable to understand why ulceration did not follow, with, possibly, cicatricial contraction or ugly adhesions, and how the parts could so favorably return to normal conditions.

The eye remained red for several weeks, and the place in the lower lid where the sloughing had occurred healed slowly. The right lachrymal passage seemed to be involved to some extent in the exudative and sloughing processes, so that it became obstructed, and constant stillicidium followed the full recovery from the disease. A small scar was

left on the lower lid where there had been sloughing. With these two exceptions, the recovery of the eye was full and complete, and the child in a few weeks appeared strong and robust. The left eye did not become implicated at all, and was uncovered as soon as the discharge from the right eye had ceased to become purulent.

I will add that no diphtheria or scarlet fever was known to exist in the neighborhood; and that another child, a boy three or four years old, who had never had either of these diseases, and who could not be sent away, was in the house, and much of the time was in the room with the patient, but did not take either scarlet fever or diphtheria; neither did any of the attendants, several in number.

It has been my fortune to see six other cases of conjunctivitis with exudation, but neither of them presented the characteristics of the above case. Two of these were young men, in whom the exudation appeared on the conjunctiva of the lower lid toward the inner canthus, and on the contiguous ocular conjunctiva. The exudation had the chamois-leather appearance, the infiltration extended into the tissues beneath the conjunctiva, and there was considerable swelling of the lid with chemosis and much pain and soreness. Corneal ulceration also developed. In each case the exudation apparently supervened upon an attack of acute purulent conjunctivitis. Under the use of a saturated solution of boric acid, both recovered, but with some destruction and cicatrisation of the affected conjunctiva, and slight corneal opacity at the site of the ulcer. One of these cases I have previously reported.[1]

Two other cases which I have observed were in adult males, in which there were patches of exudation on the conjunctiva of the lower lid of each eye, resembling that of faucial diphtheria, and which required several weeks to cure. These cases corresponded with those of so-called "chronic croupous conjunctivitis," described by A. Critchett and Juler,[2] and by Nettleship.[3] Knapp[4] also reports two cases of a similar character under the term "croup of the conjunctiva."

[1] "Buffalo Medical and Surgical Journal," August, 1884.
[2] "Transactions Ophthalmological Society of the United Kingdom," vol. iii, p. 1.
[3] "St. Thomas Hospital Reports," 1880.
[4] "Archives of Ophthalmology," vol. xi, 1882, p. 1.

Another case[1] of such conjunctival exudation has been seen by me, in which a thin pellicular membrane formed on the conjunctiva of one upper lid in a young man, debilitated and anaemic. There was marked conjunctivitis of a low type, and the pellicular exudate was easily removed with forceps, leaving the surface beneath bleeding at points, but only to re-form again soon. The disease was cured in a few days by instillations of boric acid solution.

Still another case which occurred in my practice several years ago was that of a little girl seven years old, in whom the diphtheritic exudation seemed to extend from the throat through the nose to both eyes. The eye-lids became very much swollen, stiff, and discolored, and there was considerable yellowish, watery secretion. The child died soon after the disease made its appearance in the eyes.

GENERAL REMARKS.—As to the nature and classification of exudations of the conjunctiva there appears to be a difference of opinion. Mackenzie,[2] the late renowned oculist of Glasgow, some years ago objected to making "diphtheritic conjunctivitis" a "genus or species" in the classification of eye diseases, and regarded it rather as a symptom of "much more serious changes going on in the deep-seated textures of the eye," viz., of "ophthalmitis," which might be "idiopathic, traumatic, and phlebitic," and might "follow measles, small-pox, *scarlatina*, and *typhus*, being in these last instances, in all likelihood, pyaemic, or dependent on purulent infection of the blood." But few, if any, who have had experience with this disease can agree with Mackenzie in his pathological views.

There are those who hold that this is primarily a local disease, while others believe it to be secondary, and but a local manifestation of a systemic disease. Some regard all exudative cases as really *diphtheritic*, but in different degrees of severity. Others make two distinct varieties. One form they term "croupous" or "membranous," in which the exudation

[1] Reported in the "Buffalo Medical and Surgical Journal," August, 1884.
[2] "Royal London Ophthalmic Hospital Reports," vol. ii, 1860, p. 176.

is upon the surface of the conjunctiva, and may be easily wiped away, but soon to reäppear again, which is generally limited to the palpebral portion, may be more or less chronic in character, and may proliferate into a sort of polypoid or cauliflower-like excrescences. The other form they designate "diphtheritic," in which the exudation takes place upon and within the conjunctiva, both ocular and palpebral, and into the tissues beneath, and which cannot be wiped away or removed without doing more or less injury to the adjacent parts. Other observers distinguish such varieties as "circumscribed," "confluent," and "diffuse" diphtheria (Hirschberg), and still others as "partial" and "total."

I hold that a distinction should be made between the exudative forms of conjunctival disease; and the division into croupous and diphtheritic conjunctivitis seems to me to be rational. In the first form, the exudation is fibro-plastic, superficial, partial, or more or less circumscribed; it can usually be removed easily, but re-forms again, and may supervene upon an attack of catarrhal or purulent conjunctivitis. The symptoms vary in character, sometimes being mild and at other times severe, with swelling of the lids, chemosis, ulceration of the cornea, and much pain. The discharge is generally muco-purulent, sometimes altogether purulent. The exudation is not reproduced in others by communication.

On the other hand, in the truly diphtheritic form the exudation is less circumscribed, is thrown out upon the surfaces of the conjunctiva, where it congeals into a semi-solid mass, frequently gluing the lids and the ball firmly together, and is also infiltrated into the tissues beneath. The lids become very stiff and much swelled, the upper one is elongated and overlaps the lower, the inner surfaces look yellowish-gray and anaemic, and the outer surfaces are dark red and shiny. Frequently the skin of the lids vesicates, the vesication being soon followed by an external deposit of the diphtheritic exudation. The deposit upon and within the tissues so compresses and chokes the blood-vessels that the nutrition of the cornea is seriously compromised, and too often it succumbs

and sloughs, with permanent loss of sight. The discharge at first is comparatively scant, watery, and yellow. After three to eight days the exudation begins to soften, and the discharge becomes purulent. The constitutional disturbance is generally very great; an eruption resembling scarlatina is sometimes noticed, and the patient often dies. If death does not take place the eye recovers, sometimes with good vision, but more frequently with blindness, or with changes which very much deform the eye or impair its functions, these changes being due to the ulcerative processes, which are so destructive to the cornea and conjunctiva. The course of the disease is marked by much suffering, and it develops a specific virus which makes it directly communicable from one person to another.

Thus it will be seen that the two diseases, croupous and diphtheritic conjunctivitis, present very different pictures in symptoms, results, and aetiology, and that the one is easily distinguished from the other.

These diseases also differ in the indications for treatment. While it is not well determined as to what remedies should always be used, it is well determined what at certain stages and in certain forms should not be used. Certain caustics and stimulating agencies, properly applied, are permissible in croupous conjunctivitis, but in the diphtheritic form they are emphatically injurious.

The proper treatment of croup of the conjunctiva seems to me to consist in strict cleanliness of the parts, the use of antiseptic remedies, and the occasional removal of the pseudo-membrane. In acute cases mild astringents should be frequently applied, and for this purpose, and also as an antiseptic, I prefer boric acid solution. Weak solutions of nitrate of silver are also efficacious. In chronic cases, the careful cauterisation of the diseased surface, after the removal of the exudation, seems to be beneficial. As to other local applications, a great variety have been tried, but without any definite opinion having been formed as to their value.

In treating diphtheria of the conjunctiva, Von Graefe's

original methods are still followed by many. These consisted in strictly avoiding caustics, at least until the onset of the purulent stage, and in using ice applications, leeching and other local blood-letting, mercurials, and most rigid and antiphlogistic regimen. In some cases, instead of cold, he used hot applications to the affected eye. Knapp[1] says he "knows of no more important remedy than the energetic and persistent application of cold," and he does not endorse Mooren and Berlin, who use warm applications in the exudative stage. Arlt[2] recommends local bleeding in vigorous persons, and the use of cold to the lids proportionate to the degree of temperature in them. If "the lids no longer feel hot, and especially if the applications are unpleasant to the patient, they should be stopped, or warm applications substituted," and these are not contra-indicated by corneal ulceration. He doubts the utility of mercurials in this disease. He says that a one per cent. solution of nitrate of silver, solutions of permanganate of potash, borax, chlorine water, etc., may be used later for the purpose of diminishing the secretion; but even without them "the conjunctiva returns, in a few weeks, to its natural condition, so far as it has not become phthisical."

De Wecker[3] says,—"Cauterisation and scarification should be avoided. Even cold must be employed but sparingly in severe cases. Alone of all the others, antiseptic treatment can be resorted to without misgiving from the very outset." The amount of purulent discharge will decide the extent of cold that should be applied. The more marked the diphtheritic state, and the less the discharge, the greater the indication for heat. If the cornea becomes dull, and sloughs, abandon cold and use "warm aromatic fomentations, or compresses moistened with carbolised water, or a half per cent. solution of salicylic acid." The only caustic "that can be directly

[1] "Archives of Ophthalmology," vol. xi, 1882, p. 10.

[2] "Clinical Studies on Diseases of the Eye, including those of the Conjunctiva, Cornea, Sclerotic, Iris, and Ciliary Body." Translated by L. Ware, M. D. Philadelphia, 1885, p. 70.

[3] "Ocular Therapeutics." Translated by Litton Forbes, M. A., M. D., F. R. C. S. London, 1879, p. 68.

applied to the mucous membrane in these cases," he says, "is a strong solution of salicylic acid," 1 to 10 of water with sufficient biborate of soda to dissolve the acid. "A preliminary application should be carefully tried, followed immediately by ablution in order to mitigate the pain." If the vascularity of the conjunctiva is increased, its use may be persisted in. In some cases he advises certain forms of blood-letting, and, if not contra-indicated by weakness, bringing the patient under the influence of mercury, preferring inunctions for this purpose. The diet requires careful attention. Tweedy[1] recommends the use of a solution of quinine, to be applied constantly to the eye by compresses wet in it, and frequently instilling it into the conjunctival sacs. His formula is,—

℞ Quiniae sulph. gr. iij.
Acid sulph. dilut., q. s.
Aquae, ℥j.

Nettleship[2] says,—"The agents to be relied upon are (1) either ice or hot fomentations,—ice, if it can be used continuously and well; fomentations, to encourage liquid exudation and determination to the skin, if the cold treatment cannot be carried out, or fails to make any impression on the case; (2) leeches, if the patient's state will bear them; (3) great cleanliness." Hirschberg, who has written considerably on this disease, advises iced applications and bran poultices, with mercurials. Dr. Bergmeister, of Vienna, and others, have used insufflations of flores sulphuris (flowers of sulphur) with improved results.

A. Vossius,[3] of Giessen, has used a four per cent. solution of salicylic acid in glycerine, when aqueous solutions of carbolic, salicylic, and boric acids had failed to benefit. The glycerine solution was painted on the conjunctival surfaces every half hour, with an immediate reduction of the swelling

[1] "Lancet," vol. i, 1880, pp. 125 and 282.
[2] "Students' Guide to Diseases of the Eye." Third Am. edition, 1887, p. 112.
[3] "Klin. Monatsbl. f. Augen," 1881, Nov., p. 418; "Ophthalmic Review," vol. i, 1882, p. 155.

of the lids and chemosis, and the healing of a large corneal ulcer, which threatened the destruction of sight. Dr. Mayweg,[1] of Hagen, at the Heidelberg Ophthalmological Congress, 1884, spoke highly of the use of iodoform. His method was to open the lids, and, after thorough cleansing, fill the conjunctival sac with powdered iodoform, and then apply a pressure bandage. He stated that he had never failed to save the eyes when this treatment was begun before the cornea became affected. Alt,[2] of St. Louis, contrary to the practice of most others, "treated the lids which came under my [his] observation, when the diphtheritic membrane was not yet large, or during its development, at once with nitrate of silver, thinking that the coagulation of the albuminous masses would act virtually in an antiseptic sense. The results were in the main satisfactory." He admits, however, obtaining the best results in his last case, in which a continued antisepsis was kept up by instillations of bichloride of mercury, 1 to 2,500, every hour, and a solution of cocaine and atropia in a four per cent. solution of boric acid instilled every three hours. No nitrate of silver or other caustic treatment was used in this case.

Other measures of combating this terrible disease, whose results are so disastrous to sight, have been recommended from time to time, but there is still much to be desired. My own treatment served me well in a most severe case, as well as in the more mild ones, but the experience is too limited to make it more than suggestive. I certainly shall repeat its use, if opportunity again presents itself. To recapitulate, it consisted essentially in cleansing the eye every half hour or hour with bichloride of mercury in a saturated solution of boric acid, 1 to 5,000, keeping compresses constantly applied wet with the same, and filling the conjunctival sac and palpebral fissure, and covering the cornea, with powdered boric acid, renewing it as often as dissolved or otherwise removed. When the purulent stage was established, mild astringents

[1] "Ophthalmic Review," vol. iii, 1884, p. 322.
[2] "American Journal of Ophthalmology," vol. iv, 1887, p. 48.

and antiseptics were used; and, as such, the saturated solution of boric acid was selected.

Other remedies may be used, and especially such as are indicated, when the cornea is affected, should be applied. As to prophylaxis in the diphtheritic form, isolation is important, at least from other children, as it is peculiarly a disease of childhood. When one eye only becomes affected, the other should be carefully protected.

In this paper I have not attempted to present a systematic study of the subject, but rather to place on record some interesting cases of these rare forms of disease, and to direct attention to some methods of treatment that have commended themselves to other practitioners and to myself.

INTRA-RECTAL TREATMENT OF HAEMORRHOIDS.

By LEROY J. BROOKS, M. D., of Chenango County.

September 27, 1887.

The home of an internal haemorrhoid is within the rectum. It should be treated there. If we take the opportunity to examine the haemorrhoid protruded, on a congested, swollen base of mucous membrane, the tumor itself turgid with blood, abnormally sensitive, and its relations disturbed, ready to retract at the slightest touch, and the same haemorrhoid when returned to the rectum, on a simple reddened, nearly normal base, the tumor much less in size, free from the excess of blood, without sensitiveness, and normal in its relations to its base, we would not question as to the proper place for it and its treatment. I believe that anatomical considerations alone indicate that safety, efficiency, and lessened suffering result from the treatment of this affliction within the sphincter ani.

Experience demonstrates that simple measures will remove haemorrhoidal tumors, when treated within the rectum, which have no effect upon them when protruded, and that such treatment equals in efficiency the more serious procedures applied to the protruded tumor.

I have selected as a title the intra-rectal treatment of haemorrhoids, not to advocate any one process alone, but under the firm conviction that whether the treatment be by local application, by injection, ligation, crushing, or cautery, it should be done without the conscious protrusion, or the dragging down of the tumor and rectal membranes, but rather in their natural location within the sphincter ani, free from unnecessary abnormalities of circulation and nerve irritation.

Such treatment requires properly constructed instruments. Rectal specula, as a rule, such as are figured in all surgical works, even of recent date, are not only instruments of tort-

ure, requiring anaesthesia for their satisfactory use, but are improperly constructed for use in the treatment of most diseases of the rectum. Their spreading wings distend and render tense the rectal walls, change the natural relationship of the parts, and frequently lacerate the mucous membrane.

A proper instrument should possess the following virtues: It should be easy of introduction and removal, without producing pain or injuring the mucous membrane. It should allow a good view of the parts to be treated. It should permit the haemorrhoids to "drop into" its opening without distension or change of relationship of their bases. There are several such now in the market. Those made by Leach & Green of Boston, or Lilly of Indianapolis, or that known as the Brinkerhoff, are all constructed on the same principle, conical specula with slide, and with reflecting mirror within. The one presented is the largest of a set, and could be improved by making the end still more conical.

With less regard for the magnitude of the "operation fee" or for the dignity of the procedure than for the welfare of the patient, I suggest the following four methods, in their order of preference:

1st. Irrigation with hot water.

2d. Applications to surfaces of haemorrhoids.

3d. Injection into substance.

4th. Operative procedures proper, either by ligation, crushing, or cautery.

I have placed hot water irrigation at the head, not because the suggestion is new, but because I believe that its value is not appreciated by the profession. It is scarcely necessary to recall its marvellous value in uterine hypertrophies and pelvic thickenings, but I do so to call attention to the fact that in such cases, unless the patient is in a reclining position with hips elevated, in a posture to allow perfect restoration of the circulatory balance, it accomplishes nothing, and even aggravates the disease.

Position of the body and of the tumors is equally important in the treatment of the disease under consideration. A

stream of hot water applied never so faithfully to a protruded stagnated haemorrhoid will not cause its removal. Elevate the hips, return the tumor to the rectum, apply the hot water at a temperature of from 100° to 110° about twenty minutes each day, and in many instances all haemorrhages will permanently cease, the haemorrhoidal appearances vanish, the vessels contract to their normal calibre, and the rectal walls regain their normal tone and strength. This fact has been strongly impressed upon me when, reasoning from the value of hot water in diminishing vaginal and pelvic tenderness, I have preceded operations upon troublesome haemorrhoids by the hot rectal irrigation, and found, when ready to operate, that the tumors had diminished to an extent to render surgical interference unnecessary.

The only instrument necessary aside from the fountain syringe is a tube so constructed as to allow a ready exit for the water. Such a one I exhibit, the principle of which is common, but which permits the thorough application of the water to the rectum, is easy to introduce, and permits a good return flow. At least half of the cases of internal haemorrhoids will recover to the point of being free from discomfort or harm after the treatment suggested.

The question may be asked, Is relief or cure permanent? Whatever the nature of the treatment, the permanency depends upon an intelligent attention to pelvic and portal circulations, and an observance of such rules as are necessary for all haemorrhoidal patients, concerning diet, attention to the regularity of movements of the bowels, etc.

Statistics of treatment of haemorrhoids are of comparatively little value, for the removal of one or more tumors by no means guarantees that others will not appear if proper care be not taken. I have patients now under observation who have fully recovered from serious haemorrhoids, have remained apparently well for months and years, and are still free from any annoyances.

The double value of the combination of hot vaginal irrigation and the application of iodine and carbolised applications

to uterine diseases naturally suggests its use in haemorrhoids. The method hastens the relief, and undoubtedly makes the cure more permanent. Careful experiments demonstrate that applications to the rectal mucous membrane of Churchill's tincture of iodine penetrate through the membrane into the basal walls, or, if applied over haemorrhoids, into a tumor a distance varying from one to three lines. In some spongy tumors it will penetrate their entire structure. This I have clearly demonstrated by applying the remedy and subsequently removing the tumors. The result is a coagulation of the albuminous element, a contraction of the intervenous tissue, and a partial solidification of the haemorrhoid. It does not produce coagulation of the blood within the blood-vessels. Monsel's solution of iron penetrates even deeper than the iodine, and Ross and Nothnagel attribute to it power by external application to coagulate blood within veins without penetration of them. I have not been able to confirm this by experiments upon animals. Carbolic acid exhibits a very similar power, coagulating albuminous elements and exerting a peculiar contractile influence upon the tissues, oftentimes causing retraction of a prolapsed mucous membrane. It penetrates the tissues deeply in a twenty per cent. aqueous solution, without producing slough. It possesses the advantage over the others of having an anaesthetic quality, particularly if an application of vinegar be previously made. The use of glycerine destroys much of the anaesthetic power. The carbolised oil does not penetrate the tissues as deeply as an aqueous solution. The measures suggested produce, as I shall show later, the result desired from the use of the injection method. Necessarily they are somewhat slower in the completion of the work, but possess the advantage of absolute safety, reasonable surety, and practical freedom from pain. In making such applications the tumor should be exposed through the speculum, well dried, and the surrounding mucous surfaces protected. Make the application to the tumors only, keeping the parts exposed until they are dry; then withdraw the speculum and inject an ounce of olive oil.

The use of either of the remedies suggested produces but momentary burning, and may be repeated in two or three days. Oftentimes two or three applications afford permanent relief, and the treatment rarely needs to extend over a month, particularly if followed by the home treatment with hot water. This method should not be compared with the use of astringent ointments, washes, or suppositories, necessarily weak enough not to harm the healthy mucous surfaces, or of such caustics as produce sloughing of tissue, but should rather be considered as analogous to our use of the same remedies in other hypertrophies.

One needs to ask pardon for referring to a method so much discussed as injection, so much praised and yet slandered, and were it not for the feeling that the process is not yet fully understood, I could dismiss this part with but few words. It is doubly important that the treatment should be carried on within the rectum. To inject a protruded swollen haemorrhoid, its veins distended and weakened, with a solution which would coagulate the blood within it, cannot be considered a good surgical procedure, and would be one inviting embolism, phlebitis, and the other bugbears of haemorrhoidal injections. Restore the tumor to the rectum, and we reduce to a minimum both the tumors and the dangers. It relieves the operator of the necessity of dragging down or holding the tumor with a tenaculum—an unnecessary torture. The injection of a protruded pile is often quite difficult, owing to the sensitiveness and ready retraction of the tumor, but through a proper speculum it is not only easy of performance, but so free from pain that the patient seldom recognises that anything more is being done than to make an examination. The strength of the solution is a matter of great importance, and it is fair to infer that a large percentage of the serious results reported have been caused by the use of concentrated solutions which produced deep and unmanageable sloughs, not alone of the pile, but of the rectal walls. Cases of this kind have come under my observation, and a skilled and respected surgeon assured me not long since that he had abandoned the

method because of its dangers, and that he had used a seventy-five per cent. solution of carbolic acid and always expected slough. He may always expect it. While such solutions destroy the haemorrhoid, they necessarily increase the dangers of haemorrhage and thrombus, and aggravate the pain. The purpose of treatment by injection is to obtain the peculiar contractile power of the carbolised solution, to produce interstitial or intervenous inflammation and subsequent absorption, without causing coagulation of the blood within the veins. It should not be used strong enough to produce sloughing.

The following statements are the result of experience and experiments. A five per cent. solution in olive oil coagulates blood outside the body in a firm clot, or rather increases the firmness of an ordinary clot. A ten per cent. solution coagulates it into a much harder one. The five or ten per cent. solutions, however, do not coagulate the blood within the blood-vessels, even when injected directly into the veins themselves. A twenty per cent. solution does not always, but does occasionally, as shown by experiment, and as possibly indicated by the following experience.

CASE. A very anaemic lady, much emaciated, had had a bleeding haemorrhoid for months. She had also a large uterine fibroid which seriously obstructed the pelvic circulation, but from which there was no haemorrhage. Knowing that any operative procedure could only promise the most temporary relief, and desiring to arrest the most prominent cause of drain, I injected the haemorrhoid from which most of the blood seemed to come with a twenty per cent. solution of carbolic acid. There was no pain, and but brief after tenderness. The haemorrhages were completely arrested; the patient began to take nourishment and was giving evidences of marked physical gain, when, on the twentieth day following the injection, she complained of pain and tenderness in the left arm along the course of the brachial vein, which within three hours was followed by an almost complete arrest of the venous circulation, extensive swelling of the arm, and severe pain. Within a week the arm improved very greatly, and the patient seemed to be doing well, when one evening, about ten days after the commencement of the trouble in the arm, she suddenly cried out, "My head!" tore her hair, and screamed with the cerebral pain, and died within a few moments. Possibly or probably a

cerebral embolism occurred, but whether the brachial obstruction was the result of a phlebitis and consequent thrombus, arising from the patient's debilitated state, and the cerebral embolism was also dependent upon that, or whether one or both obstructions had their origin from the injected haemorrhoid, we can only infer, for there was no autopsy.

Dr. Agnew has recently reported a case of cerebral embolism, occurring during the operation of ligating a haemorrhoid in an apparently healthy man. I cannot imagine any more reason for expecting an embolism after injection than after ligation, even admitting the statement that the same solutions which coagulate blood without the body may coagulate it in the vessels.

The above case is the only one in my experience that justified even a suspicion of danger from the operation, properly performed. As I have previously stated, a ten per cent. solution of carbolic acid unites with the albuminous elements of the tumor, shrivels and contracts it, but does not coagulate the blood in its vessels even if injected directly into them. I have further fully satisfied myself that such a solution will cause the removal of internal haemorrhoids as completely as if sufficient strength were used to produce slough. If these conclusions be true—and careful experiment seems to justify them—the danger of injecting haemorrhoids disappears. The method promises absolute safety, efficiency, and painlessness.

Certain rules must, however, be observed to make the operation painless:

1st. Inject the haemorrhoid only. An injection through the tumor into the rectal walls will invariably excite pain (often severe) and imflammatory action.

2d. Inject tumors above the sphincter. To inject one lying in the grasp of the muscle will excite annoying spasms and pain.

3d. Use from three to six drops of the solution at a time, injecting slowly and through a small needle, so that the solution emerges in drops.

4th. Use a solution in olive oil instead of glycerine.

I conclude that the injection method is applicable to the

treatment of all internal haemorrhoids: Dr. Kelsey certifies that the worst cases seem most amenable to the treatment; that the operation properly performed is absolutely safe. It is painless, and need not interfere with the ordinary occupation. It is probable that the tendency of the disease to return is somewhat greater than after ligation; but the simplicity, safety, and painlessness of injection make a second treatment more acceptable to most patients than the dangers and pain of ligation.

Haemorrhoidal tumors can be ligated within the rectum with but little difficulty. My method is to place the patient in a position to bring the tumor to be operated upon on the lower side. The diseased part is exposed through the speculum, the larger sized instrument affording the greater freedom of manipulation.

The tumor is caught by a side-pronged tenaculum, and a catgut ligature passed above the tenaculum and tied beneath the prongs so that it will not slip off. The ends of the ligature are passed through the openings in the arm of the crutch-shaped instrument, so as to draw the ligature firmly on the haemorrhoid. A double knot may be made in this way, the tenaculum removed, and the ends of the ligature cut off.

My experience with intra-rectal ligation has thus far been limited, and not sufficient to justify a comparison of results with external ligation. The process can undoubtedly be improved. It is certain, however, reasoning from anatomical considerations, that such a procedure promises greater freedom from danger than external ligation, is not so painful, and is no more difficult of execution.

Having had no experience in the use of galvanic cautery or crushing instruments, I venture no suggestions farther than that there is no reason why such measures could not be used through a proper speculum as well as upon the protruded tumor.

METHODS OF APPLYING COLD.

By H. D. Didama, M. D., of Onondaga County.

September 27, 1887.

That frigeration is useful in pyretic affections seems well established by reason and observation. A hundred years ago that eminent Scotch physician, James Currie, testified to its efficacy in a publication which notably influenced the practice of his period.

In modern times the credit of the wide-spread employment of cold as an antipyretic, and its application in a systematic and well regulated manner, is due almost exclusively to the wisdom, perseverance, and elaborate statistics of our friends, the German physicians.

Our conservative British brothers and their brilliant neighbors across the Channel have united, with all alert and unprejudiced American investigators, in verifying the experiments and corroborating the testimony of their German *confrères*.

And yet, notwithstanding all this accumulated evidence in its favor, the employment of cold as a principal agent, or even as an adjuvant, in hospital and especially in private practice, instead of being universal, is actually far less general than it was soon after the publication, fifteen years ago, of Liebermeister's masterly monograph on the treatment of typhoid fever. It may not be uninstructive to consider some of the causes of this partial disuse of a remedy of acknowledged value.

1. *Distrust of the dictum*, "*The fever kills.*" A few well authenticated cases of long continued excessively high temperature, in injuries of the nervous system, where complete recovery took place, have led many to believe that a fatal issue is due not to the high fever, but to the poison which produces the fever,—the temperature being no more a patho-

genic factor than is the pulse, but simply an index to the amount or virulence of the fever-poison—cacozymes, or what not—as the pulse is an index to the vigor or weakness of the heart.

This belief seems to have been fortified by those somewhat rare cases of essential fever, and less infrequent ones of inflammatory affections, where a moderate and even low temperature is associated with the gravest morbid processes. The inquiry then naturally arose, If the fever be only an index and not the morbific agent itself, why resort to frigeration? The shrewd but somewhat hasty propounder of the inquiry gave a practical answer by striking cold from the list of his remedies.

It does not come within the scope of this paper to answer theoretical or other objections to the employment of cold, or to attempt an explanation of its action. It is enough for the present discussion to refer to the well established fact that keeping the temperature, by means of frigerants, below a certain elevation conduces to the comfort of the patient, and adds greatly to the probabilities of his recovery.

2. *Antipyretic drugs.* Neglect of cold as a therapeutic agent is due also to the rapidly increasing list of frigerating medicines,—venerable but ever vigorous quinine; risky digitalis; antipyrine, whose last year's laurels are already beginning to fade; antifebrine, the still reigning favorite; and the ineffably excellent anticaloricine, undiscovered as yet, but whose advent, impatiently waited for by the disciples of the New, cannot long be delayed.

Whether these scions of the prolific progeny of "ines" act by hindering tissue transformation, or by checking the fission of vicious micro-organisms, or by paralysing the calorific inhibitors—if such inhibitors exist—it is not important here to inquire. That their use in large and repeated doses, convenient and fascinating though it may be, has its frequent drawbacks and dangers is well enough known to give us pause, or at least to check reckless indiscrimination.

3. *Faulty methods.* But, after all, is not the want of a

convenient, agreeable, safe, and inexpensive manner of applying cold the chief cause of the disfavor into which it has fallen? Let us examine briefly the methods which have been, or still are, in use.

(1) *Affusion.*—Currie 's directions were,—The patient having been seated in a convenient tub, pour cold water upon his head and shoulders till the temperature is suitably reduced; then put him into bed. Repeat the affusion as often as his skin becomes hot and dry.

Currie, in his enthusiasm, went so far as to claim that, early enough employed, cold affusion would actually abort several distinct affections which then, and even to our time, were regarded as identical, and labelled Typhus. Well might some modern Roland exclaim, "O Nosography! how many blunders have been committed in thy name!" But getting into a tub every half hour or so, and remaining in a sitting posture while subjected to pouring, was neither convenient nor safe for a typhoid patient in any stage of his disease. So the practice, notwithstanding the extravagant commendations of its distinguished author and his disciples, soon fell into disuse and partial oblivion.

(2) *Baths.*—The German baths, of which as many as two hundred have been administered in a single case of typhoid, are not practicable in the rural districts, or in the abodes of the poor: the cost of the apparatus is too great. Even where expense is of no moment, the frequent lifting of the patient from his bed into the bath, the prolonged watching him while the water is cooled down from 80° to 68° F., and the lifting back to bed when the immersion is over, are all troublesome to the attendants. This lifting and immersion are also tiresome and unpleasant to the patient. They may be dangerous. The extremities, which do not need cooling, frequently become so cold that bags of hot water must be applied; the head, which most requires frigeration, is not cooled at all; and haemorrhages are not only likely to be produced, but actually have been produced, by the handling and disturbance of the poor victim, who needs rest and quietude.

(3) *Sponging.*—This has little effect upon the temperature.

(4) *Packing.*—Wrapping the patient in wet blankets requires two beds, and is disagreeable and mussy.

Certain editors—not residents of this country, of course, and surely not medical editors resident anywhere—are said to lie every day in damp sheets with facility and even felicity; but to the average fever patient wet wraps are objects of disgust and dread.

(5) *Sprinkling.*—So, too, keeping the bed covering wet by means of a sprinkling pot, a mode of affusion proposed by Currie, and practised by our wisest and best-beloved Flint, is open to the objection that, while it does not shake the patient up, the constant contact of water is unpleasant to him; and to the further objection that his head and the depending portions of his body, where the heat is greatest, escape the frigeration entirely.

In all these methods, it will be noticed, actual contact of the cold water occurs. But dry cold is quite as efficient, and far more agreeable.

(6) *Water-beds and Coils.*—The water-bed, or the coils of rubber pipe connected with a hydrant, are creditable substitutes for the bath and the sopping blankets or sheets. The patient is kept dry. They bring the cold to bear where it will do the most good. They can be so arranged that the cooling will be limited to the head and body.

But the cost of the water-bed will confine its use to hospitals and to the mansions of the rich. Farthermore, a frequent renewal of the cold water in the bed is necessary, or it will cease to be of any use; and this renewal is very troublesome alike to the household and to the patient.

The coils of rubber pipe are somewhat expensive. They are not readily obtainable in the country. The hydrant or tank with which they must be connected is an impossible arrangement in many sick-rooms, and inconvenient or clumsy in all.

The desideratum.— For universal use, something which combines all the excellences of the various appliances named, and which is free from their defects, is urgently needed.

To some extent the simple device which will now be described and exhibited supplies the want. It has been in use for a dozen years or so in central New York, and its merits are fairly well known. The entire apparatus consists of two ordinary cotton sheets and two rubber-cloth sheets, all of the same length and width, and two stout rods an inch and a half in diameter and five and a half feet long. A single rubber may be folded so that it will answer at a pinch, but it will not be as convenient or comfortable as two sheets, each of which is large enough to cover the whole bed. Any mechanic can construct the rods. The cotton sheets are to be folded twice, and wrung out of cold water. Having everything in readiness, the bed may thus be made up:

Remove everything from the mattress but the pillows. Put on one of the rubber sheets, letting it extend up so as to cover the pillows. Put on a folded wet sheet so as to cover one quarter of the bed extending from the middle up over the pillow on one side. Put on the other rubber sheet. Put on the ordinary cotton or linen under sheet.

Put the patient on the side of the bed where the wet sheet is folded. Cover him with the ordinary upper sheet and blankets.

When it becomes necessary to move him because the wet sheet has become warm, wring another one out of cold water, and arrange as before between the rubber sheets and over the pillow on the other side of the bed.

Then roll the edges of the under sheet a little way upon the rods so as to make a stretcher, when two persons, one on each side of the bed, can lift the patient over to the cool place without disturbing him in the least.

The wet sheets, which have become warm, can be put into cold water and be ready for a repetition of the performance.

The advantages of this arrangement are obvious. The apparatus is cheap. It can be used anywhere. The patient is never wet. The moving does not endanger or annoy him. In many cases it does not even waken him when asleep. The temperature can be graduated at pleasure. The cold is

applied under the hot head, and under the depending parts of the body which need it. It is not applied to parts "pedad" to the hips. Refreshing sleep is one of its earliest products. Delirium is prevented or quieted. In short, the device seems to meet all requirements. It is simple, inexpensive, safe, agreeable, effective. If the patient should feel a little chilly, a folded dry sheet may be placed underneath him so as to remove him a little farther from the cold.

If antipyretic drugs be required, they can be used in moderation. The enormous and perilous doses often given will seldom be demanded.

DISCUSSION.

DR. FERGUSON asked if Dr. Didama had clinically found the temperature reduced by the method which he suggested.

DR. DIDAMA replied that he had always secured a reduction of temperature. The method has been employed in a number of cases in a girls' boarding-school, and was always agreeable and effective. He had also frequently used it in his private practice.

A CASE OF CHRONIC PYELITIS SUCCESSFULLY TREATED BY KOLPO-URETERO-CYSTOTOMY, IRRIGATION OF THE PELVIS OF THE KIDNEY, AND INTRA-VAGINAL DRAINAGE. ANALYSIS OF THIS, AND OF A PREVIOUS CASE TREATED BY THE SAME METHOD.

By NATHAN BOZEMAN, M. D., of New York County.

September 27, 1887.

I presented a paper to the Ninth International Medical Congress, entitled "The Gradual Preparatory Treatment of the Complications of Urinary and Faecal Fistulae in Women, Including a Special Consideration of the Treatment of Pyelitis by a New Method, and the Prevention of the Evils of Incontinence of Urine by a New System of Drainage."

In this communication I reported at length the history of a case of pyelitis which occurred as a complication of a large urinary fistula, involving the urethra, uterus, and both ureters, and described its successful treatment by irrigation of the pelvis of the kidney. I also briefly alluded to the extension of this method to the treatment of a case of pyelitis not associated with a fistulous opening in the bladder, and stated that the orifice of the ureter was exposed by an operation which I ventured to name Kolpo-uretero-cystotomy. My purpose is now to report more fully this latter case, to describe the operation, and to show the application of intra-vaginal drainage to the treatment of the resulting incontinence of urine. To this I will add an analysis of my first as well as of my second case, together with such observations on disease of the urinary organs in women as seem appropriate.

In the paper referred to I showed that in the treatment of cases of urinary fistula by the use of intra-vaginal drainage,

by means of an instrument which I had recently devised, I was able to conduct away the urine from the bladder, and to prevent its contact with the vaginal mucous membrane and the integument of the external genitals and surrounding parts. But as this description of the method has not yet been published, a short account of the principle upon which the action of the instrument depends is necessary, in order to understand its use in the case to be reported. The essential part of the instrument is a hard rubber or metal drain, which fits in the vagina and is connected by a soft rubber tube with a bag or urinal attached to the thigh near the knee. Its upper surface, which corresponds with the vesico-vaginal septum, is grooved, or made concave, and perforated by a number of openings in such a manner that one or more of them must come in apposition to the fistula. The efficiency of the instrument depends upon the adaptation of the vagina to the form of any rounded body placed in its interior. In consequence of the atmospheric pressure, the vaginal mucous membrane clings closely to the instrument, and blocks up all the openings on its upper surface, except those opposite to the fistula. So intimate is this contact that sometimes, when the drain is removed, an imprint of its upper surface is left on the anterior vaginal wall, and teat-like processes of mucous membrane, corresponding in size and position with the openings, are formed. The margins of the fistula are accurately applied to the instrument, and the defect in the septum is supplied by its upper surface. All communication between the bladder and vagina and every other avenue of escape being in this way shut off, the urine passes through the perforations into the interior of the instrument, and is conducted by the tube into the urinal. The urine is thus drained directly from the bladder, and does not come in contact with the vaginal mucous membrane. The instrument, therefore, does not drain the vagina, and the designation, intra-vaginal drainage, is intended simply to suggest the use of an instrument placed *within* the vagina, in order to conduct away the urine from the bladder.

The drain may have various shapes, to adapt it to the peculiarities of the vagina in individual instances, or in order to subserve other purposes in combination with drainage, as, for example, support of the uterus or dilatation of the vagina. I described several forms of the instrument, and endeavored to give them distinctive names. In the treatment of the case to be presently reported, I used what I called a utero-vesical drainage support (Fig. 4). It is a simple and convenient form, and is especially applicable to cases where an opening is made in the bladder for the purpose of draining that organ, or of exposing the orifice of one of the ureters.

THE CASE.—Mrs. B, aged 34, came to me for treatment from South Carolina, and was admitted into my service in the Woman's Hospital, February 27th of the present year The patient had borne five children, and had had no miscarriages. Her labors appeared to have been normal. Two years and a half ago, after having been married ten years, she became a widow. In the fourth month of her last pregnancy, about three years before I first saw her, she began to suffer from severe pain in the right lumbar region, and this symptom had continued, and was growing worse. At the time when she was admitted into the hospital she described the pain as variable in character, and aggravated by exercise. At times it was acute, and radiated to the groin and down the thigh toward the knee; more frequently the pain was dull and constant, and confined to the lumbar region. Her urine for two and one half years had been almost constantly stained with blood, which was sometimes present in sufficient quantity to cause a thick deposit at the bottom of the vessel.

In the course of her illness the patient had also complained of frequent urination and vesical tenesmus, and suffered from dizziness, headache, cold hands and feet, loss of appetite, nausea, and vomiting. Her general health depreciated, and she lost flesh and strength. She was confined to bed for six weeks by a severe illness, which began in November of last year. At this time she suffered from partial suppression of urine, severe paroxysms of pain, nausea and vomiting, and high fever. In the course of this attack she found two calculi in her urine. The first one passed was an inch and a half long, and about the size of a slate pencil; the second was broken into small pieces. The haematuria ceased before the passage of the last calculus, but at the end of five days the urine again became bloody.

When the patient was admitted into the hospital, she was very much emaciated. Her complexion was sallow, and her mucous membranes very pale. She was extremely weak, and suffering almost constant pain in

the region of the right kidney. The urine was of a reddish color, acid in reaction, contained albumen, and deposited a thick sediment, consisting of blood and pus. The uterus was found to be large, retroverted, and

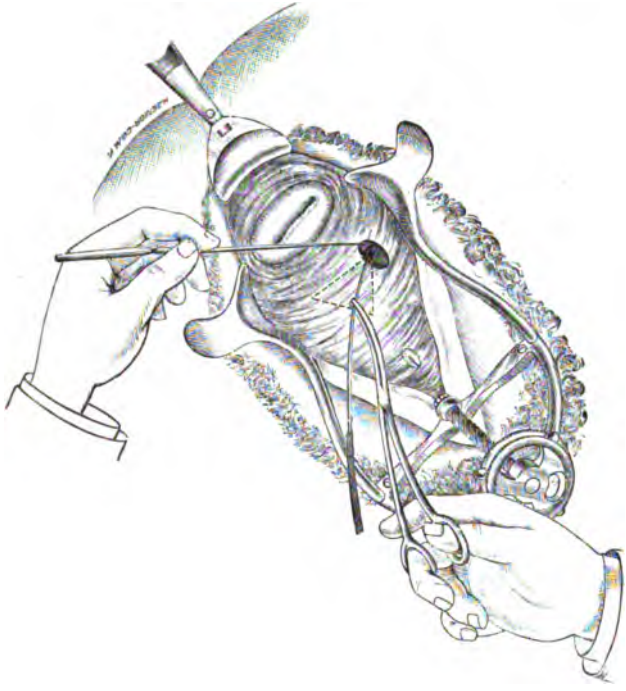


FIG. 1.—The opening at the right ureteral angle of the trigone of the bladder, the result of the operation of kolpo-uretero-cystotomy, and method of introducing the catheter. (Drawn from nature, by Dr. John Aspell,[1] member of the House Staff, Woman's Hospital.)

The patient is placed in the left lateral prone position, and the anterior vaginal wall is exposed by my dilating speculum and perinæal elevator. The upper border of the fistula is seized and everted with a tenaculum, and the catheter is seized and passed into the pelvis of the kidney by means of my uterine forceps (Fig. 2), which are well suited for this purpose.

FIG. 2.—Uterine forceps.

[1] I am greatly indebted to Dr. Aspell for the skill and accuracy with which figures 1 and 5 were drawn.

slightly prolapsed. During the month following her admission I made two examinations of the bladder, but discovered nothing of importance, and failed in two attempts to pass a probe into the ureter. The effect of the exploration of the bladder through the urethra in both instances was to cause an acute exacerbation of the chronic cystitis which was present.

Fig. 8.—Catheter, showing spiral curve made by the course of the ureter.

On May 6th the patient was anaesthetised, placed in the left lateral prone position, and the anterior wall of the vagina was exposed and made tense by means of my dilating speculum and perinaeal elevator. The point of a narrow-bladed scalpel, mounted in a long handle, was made to enter the mucous membrane on the right side, about one inch[1] below the cervix uteri, and three fourths of an inch away from the median line, and a circular piece of the septum was removed, forming an opening into the bladder sufficiently large to admit the index finger (Fig. 1). The orifice of the ureter was then discovered, and bloody urine was seen issuing from it. The vesical and vaginal mucous membranes were brought together at the border of the opening with a continuous catgut suture. A number eight French olive-tipped catheter was then passed into the ureter, and entered the pelvis of the kidney without meeting any obstruction. Warm water was now injected through the catheter by means of a small piston syringe. About a drachm at a time was forced into the pelvis of the kidney and allowed to escape. The irrigation was continued until the fluid which came away was free from blood.

The catheter was left in place for thirty-six hours, and the urine was collected as it flowed directly from the pelvis of the kidney. When examined by Dr. Coe, the pathologist of the hospital, the urine thus obtained was found to be alkaline in reaction, and to contain a large proportion of blood, pus, and crystals of triple phosphate. Bacteria were also present in great numbers. A week later the catheter was again

[1] The orifice of the ureter is normally situated about one and a half inches from the cervix uteri, but in this case, in consequence of the retroversion of the uterus, there was an anterior displacement of the cervix.

introduced, and allowed to remain twenty-four hours. Its continued presence in both instances occasioned nausea and vomiting, and a good deal of paroxysmal pain. After its removal the catheter retained the peculiar form imparted to it by the course of the ureter. It presented two curves, the convexities of which were in opposite directions and in different planes; in other words, it had assumed a spiral form. A stilet was shaped to fit the catheter, in order to preserve its peculiar curvature (Fig. 3).

On the day following the operation, a utero-vesical drainage support (Fig. 4) was introduced into the vagina. From the first the instrument

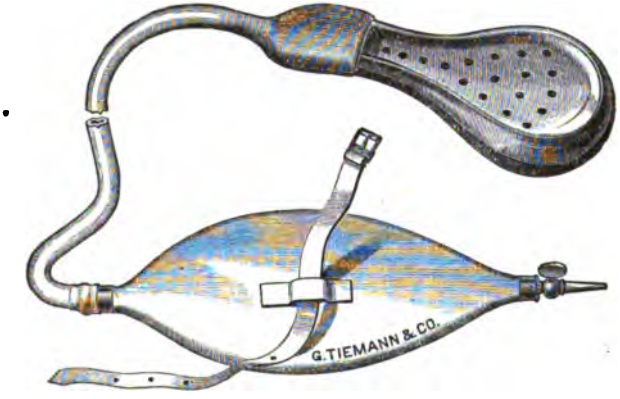


FIG. 4.—Utero-vesical drainage support.

functioned satisfactorily, and its presence in the vagina caused no discomfort or inconvenience. When the patient was sitting or standing, all the urine was collected, and none escaped into the vagina. In the horizontal position a little was lost, but the quantity was not sufficient to cause annoyance, or to excite vaginitis. In consequence of its relation to the cervix and the posterior cul-de-sac, two unexpected results followed the employment of the instrument. The menstrual blood was drained directly from the uterus, and the fundus, which was retroverted and prolapsed, was restored to its normal position by the pressure of the rounded upper extremity of the drainage support. (See Fig. 5.)

The vesical and vaginal mucous membrane having united at the border of the opening by first intention, ten days after the operation systematic treatment of the pyelitis was begun. Every day a flexible olive-tipped catheter was passed into the ureter, and the pelvis of the kidney was irrigated with a warm solution of bichloride of mercury, 1 to 20,000. The most convenient mode of introducing the catheter was found to be the one shown in Fig. 1. When done in this manner, its introduction is

FIG. 5.—The utero-vesical drainage support in place. (Drawn from nature, by Dr. John Aspell, member of the House Staff, Woman's Hospital.)

The perinæum is depressed, and the anterior wall is lifted up in order to expose the interior of the vagina. The upper extremity of the instrument lies in the posterior cul-de-sac, and (when the elevator is removed) the cervix uteri, the anterior vaginal wall, and the fistulous opening rest on its upper surface.

painless and easy. A rubber tube was attached to the lower end of the catheter, in order to lengthen the instrument and connect it with the nozzle of the syringe more readily. A small hard rubber syringe was used. At first I injected only about one drachm at a time; afterward I found that the best guide as to the quantity of fluid which should be injected was the sensations of the patient. Whenever the pelvis of the kidney was distended, a peculiar and characteristic pain was felt. The fluid was then allowed to escape, and the injection repeated until the returning fluid was colorless and free from sediment. As the treatment progressed, the size of the catheter employed was gradually increased to No. 14, and, if any useful purpose would have been served, I believe I could have dilated the ureter to a much larger size.

As a result of the spiral course of the ureter, the catheter, as it entered, rotated on a longitudinal axis. A given point on its surface, indicated by a mark, was seen to describe a complete circle. As the catheter passed toward the pelvis of the kidney, this point moved from right to left, and, as the instrument was withdrawn, the rotation took place in an opposite direction. I have verified this observation in other cases, and

found that in the left ureter the direction of the rotation of the catheter is reversed. When the catheter was passed, the urine retained in the pelvis of the kidney flowed out. The quantity thus removed was found to be variable. If the patient had been standing or walking immediately before the introduction of the catheter in the left lateral prone position, there was little or no accumulation of urine in the pelvis of the kidney; if she had been lying down, a considerable quantity was removed. At the beginning of the treatment this was sometimes as much as fifteen drachms. I was also able to measure the capacity of the pelvis of the kidney. The injection of fluid was continued as already described, but with a larger syringe, until the peculiar pain was felt; it was then allowed to escape, and measured. The capacity of the pelvis determined in this way at first was twenty-one drachms, but was at last diminished to five drachms, which, from my observations in other cases, I believe to be about normal.

In the course of the treatment I also had constructed a flexible renal sound (Fig. 6), made of a single delicate ribbon of steel twisted into a cylindrical form of suitable size and length. With this instrument I was able to explore the ureter and pelvis more easily and thoroughly than with a catheter. A calculus would be also more easily detected by means of a metallic instrument. But no foreign body in the pelvis of the kidney was discovered by its use.

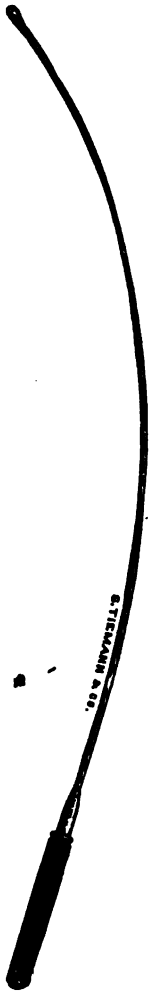


FIG. 6.—Flexible steel renal sound.

While the treatment was being carried out, the urine, as it came from the pelvis of the kidney, was frequently examined, and the quantity of pus and blood which it contained was found to be gradually diminishing. At the end of three weeks the urine was perfectly clear, and deposited no sediment. On June 25th, about six weeks after irrigation of the pelvis of the kidney was begun, the following experiment was made: The bladder was douched; the catheter was then passed into the right ureter, and a drainage instrument was placed in the vagina. The urine from the left kidney, as it was secreted, flowed into the bladder, and was collected by the drain; that from the catheter was received in a vessel placed between the thighs. In this way it was possible to collect at the same time, and in separate vessels, the urine secreted by each kidney. At the end of two hours three ounces of urine were collected from the left kidney by the drainage instrument, and four ounces by the catheter from the right.

The result of the examination of the two specimens made by Dr. Coe shows that the diseased pelvis had returned to a normal condition. His report was as follows:

	Color.	Reaction.	Sp. Gr.	Albumen.	Sediment.
Urine from left kidney	Straw ...	Neutral ...	1010	None	None.
Urine from right kidney.....	Amber..	Acid.	1020	None	An occasional leucocyte.

The form of drain used in this experiment (Fig. 7) differed from the one the patient was constantly using. Its neck was prolonged, so that its extremity extended beyond the vulva. The lower part of the catheter lay in the groove on the upper surface of the instrument, and was thus brought outside of the body without interference with the drainage of the bladder.

FIG. 7.—Utero-vesico-urethral drainage support.

As the urine returned to a normal condition, the symptoms improved; the distressing pain in the right lumbar region entirely ceased, and the patient gained appetite, flesh, and strength. I believed haste in closing the opening in the bladder unnecessary, because, by the use of the utero-vesical drainage support, all discomfort from incontinence of urine was prevented. On July 1st she was therefore sent home to Charleston, and instructed to return for the operation when her health and strength were entirely restored. She wrote to me, August 12th, the following account of her condition:

"The drainage works perfectly; there is no escape of urine, except sometimes a little while lying down. I do not suffer from any irritation whatever. The instrument keeps the uterus in position. I have not suffered any pain in the kidney. I feel better than I have for years. I have just weighed, so will acquaint you with the numbers—109 pounds—gained 19 pounds in three months [that is, since the operation]. I am able to attend church services. I can either ride or walk: neither gives me any uneasiness. My friends look at me and speak of my improvement with astonishment."

I have heard from the patient since this letter. She stated, on September 24th, that she had entirely recovered her health and strength. The case is now virtually cured. To close the opening in the bladder is easy, and may be done in a week's time.

Analysis of the above and of my previous case of pyelitis treated by the same method.

Aetiology. — Chronic pyelitis is rarely idiopathic. The causes which lead to the disease are mainly narrowing of the ureter along its course or at its orifice, the presence of calculi in the pelvis of the kidney, cystitis, and obstruction of the outflow of the urine from the bladder.

Which of these causes was operative in my second case is, unfortunately, a matter of conjecture. The patient gave a history of cystitis, and inflammation of the bladder was undoubtedly present at the time when she was under observation. Whether it existed prior to the occurrence of pyelitis I do not know. The first symptoms of the inflammation of the pelvis of the kidney appeared during pregnancy, and in other cases which I have seen there was a similar history. Whether the pressure of the pregnant uterus or of the foetal head, by causing obstruction of the ureter, gave rise to the disease, my experience is too limited to definitely decide; but I have recently treated a case in which dilatation and inflammation of the pelvis and absorption of the kidney substance resulted from the pressure of a fibro-cystic tumor of the uterus upon both ureters. Unfortunately my attention was not directed to the urinary organs during life. Death occurred on the fifteenth day after I operated for the removal of the tumor, and at the autopsy the lesions of surgical kidney were found on both sides. Retroversion of the uterus in some cases, in consequence of the pressure of the cervix uteri upon the bladder and the formation of a pouch in the vesical wall, occasions cystitis, and may also cause obstruction of the lower extremity of one of the ureters. Retroversion and enlargement of the uterus, in consequence of engorgement of its blood-vessels, were present when I first saw the patient;

but pregnancy and parturition had supervened since the first appearance of the symptoms of pyelitis.

The presence of an old peritonaeal cicatrix is a cause of obstruction of the ureter in women. No evidence, however, of a previous pelvic inflammation was afforded by the history, or by examination through the vagina. Exploration of the ureter, moreover, showed that there was no narrowing of the duct along its course, and, although cystitis was present, the thickening of the vesical mucous membrane was not sufficient to seriously obstruct its orifice. A history of the passage of calculi was given by the patient; but these should be regarded as a result of pyelitis, and not as its cause. They were, it will be remembered, phosphatic in composition, and corresponded in form and size with the calibre of the ureter. The conditions present, as was afterwards shown in the course of the treatment, were favorable for their formation. The pelvis was dilated, the urine which it contained was alkaline, and detritus of pus, blood, and phosphatic salts were frequently washed away. The shape of the calculi indicated that they were formed, in part at least, in the ureter. If, as is probable, they originated in the pelvis of the kidney, the concretions were then of small size, and not sufficiently large to have occasioned, by mechanical irritation, the extensive inflammation which was present.

Taking all these facts into consideration, it is reasonable to infer that the inflammation of the pelvis of the kidney resulted from more than one cause. The morbid process was probably set up by the pressure of the pregnant uterus, and the subsequent cystitis and uterine displacement caused its continuance.

The aetiology of the pyelitis in my first case, where it occurred as a complication of a large urinary fistula, is more simple. The orifice of the ureter was contracted to a very small size by the pressure of the cicatricial tissue which formed the upper border of the fistulous opening in the bladder: the obstruction, thus opposed to the outflow of the urine from the pelvis of the kidney, no doubt gave rise to the disease.

Symptoms.—The subjective symptoms of chronic pyelitis are not always distinctive, and are frequently obscured by the cystitis with which the disease is commonly associated. This is especially true when cystitis, and, at a later period, pyelitis, follow obstruction of the flow of urine from the bladder. Dilatation of the ureter and pelvis of the kidney on both sides, and serious renal lesions, occur in these cases so gradually as to occasion but little disturbance of sensation. No change in the symptoms or in the condition of the patient, except, perhaps, a more rapid depreciation of the general health, may therefore be observed to indicate the extension of the inflammation from the bladder to the upper urinary passages.

When, however, as more frequently happens in the female, the obstruction occurs along the course of the ureter, or at its orifice, the resulting pyelitis is unilateral, the dilatation of the pelvis more rapid, and cystitis a less prominent feature; nausea and vomiting occur, and a characteristic pain is felt in the lumbar region. When, in addition, as happened in both of my cases, the pressure of pus and ammoniacal urine in the pelvis of the kidney leads to the formation of phosphatic concretions, well marked symptoms are produced: attacks of renal colic occur from time to time, and calculi are voided in the urine. During the temporary impaction of a calculus in the ureter, foetid pus and ammoniacal urine are pent up in the pelvis of the kidney. Septicaemia follows. Repeated rigors, high temperature, persistent nausea and vomiting, and great prostration resulted from this cause in my first case; in my second, these symptoms were not present while the patient was under observation, but she gave a clear history of a similar attack.

Urinary changes.—Pus-bacteria and amorphous and crystalline phosphatic salts of lime were found in the urine in considerable quantity in both, and persistent haematuria was a marked feature of my second case. The difference in reaction of the mixed urine observed in my second case, and that obtained directly from the pelvis of the kidney on the affected

side, is interesting;—the former was commonly acid; the latter, alkaline. In the mixed urine, the acidity of the excretion of the kidney on the healthy side more than neutralized the alkalinity of the other. Characteristic cells from the pelvis of the kidney were not found: this was no doubt due to the solvent action upon them of the ammoniacal urine.

Course and termination.—The natural course of a chronic inflammation of the pelvis of the kidney is to increase in gravity and extent, and to lead to disease of the kidney. The tubular structure forming the malpighian pyramids may be, to a greater or less extent, absorbed, in consequence of the increased pressure of urine in the dilated pelvis, and the function of the cortical portion gradually impaired as the result of a chronic interstitial nephritis. Complete obstruction of the ureter may occur, and give rise to pyonephrosis; or the inflammation, extending to the renal parenchyma, result in acute or chronic suppuration.

In my first case, when treatment was begun, renal calculi were being formed and discharged at frequent intervals; rigors were often repeated, and the temperature was constantly high. The patient was evidently rapidly dying from septicaemia, resulting from the absorption of pus confined in the pelvis of the kidney. After the pus was removed by irrigation, and the obstruction at the orifice of the ureter overcome by dilatation and incision, the inflammation of the pelvis subsided, but the injury, the result of pressure and of the pyelitis, sustained by the kidney on the affected side, was indicated by the diminished quantity of urine excreted and the small percentage of urea which it contained. In my second case the disease was running a more protracted course; but the patient was suffering almost constant pain, and was greatly enfeebled by the protracted suppuration and haematuria. The pelvis of the kidney was already considerably dilated, and the presence of alkaline and putrescent urine in the calyces of the kidney was liable at any time to occasion suppurative nephritis.

The formation of phosphatic calculi in both cases, as the

result of pyelitis, illustrates the causative relation of the disease to pyonephrosis. The passage of the calculi through the ureter was difficult, and accompanied by paroxysms of renal colic. At any time a temporary obstruction of the ureter may become permanent, and give rise to pyonephrosis.

Diagnosis.—The presence of pus in the urine in considerable quantity, when the origin can be traced directly to the pelvis of the kidney, is alone sufficient to establish the diagnosis of pyelitis. But the exact determination of its source is necessary, because it may proceed from the mucous membrane of the bladder. The formation of pus may be due to cystitis alone, or the inflammation of the bladder, as frequently happens, is associated with pyelitis. When cystitis is excluded, or its association with pyelitis is ascertained, accurate diagnosis requires that the extent and exact location of the latter disease should be determined. One pelvis may be dilated and inflamed, the other healthy; or both may be involved. It is also important to detect the presence of calculi in the pelvis, the occurrence of stenosis or obstruction of the ureter at its orifice or along its course, and to measure the extent of the injury sustained by the renal parenchyma.

In my first case the diagnosis was not difficult. The symptoms were well marked and characteristic. When my attention was directed by them to the investigation of the condition of the upper urinary passages, the orifice of the left ureter was discovered in the margin of the fistula, and foetid pus was seen extending from it. Having demonstrated thirty years[1] before, and many times since, the facility with which the ureter could be explored when it was exposed by a fistulous opening, I did not hesitate to pass a catheter into the pelvis of the kidney. When, in my second case, an opening had been made in the base of the bladder, all difficulty in diagnosis, and doubt concerning the nature of the lesions present, also vanished. I was not only enabled to determine the presence of cystitis, but to measure its extent by observing the amount of the thickening of the vesical wall. The

[1] Case viii. North Am. Medico-Chir. Review, July, 1857.

origin of the pus and blood was demonstrated by visual inspection, and specimens of urine were collected by catheterisation of the ureter from the diseased pelvis. The capacity of the organ was accurately measured by filling it with water, and in this way the extent of the dilatation of the pelvis was determined. The urine from each kidney was collected simultaneously, and in separate vessels. The quantity secreted by each in a given time thus became a measure of its functional activity, and the extent of the injury sustained by the kidney on the affected side could be estimated. The use of a catheter in my first case demonstrated the narrowing of the orifice of the ureter, and the existence of obstructions at different points along its course. In my second case the employment of my renal sound, an instrument better adapted for diagnostic purposes, showed that no foreign body was present in the pelvis of the kidney. In a word, all the requirements of accurate diagnosis set forth in the outset were satisfied.

Treatment.—The most important feature in the treatment of my two cases of pyelitis is the demonstration of the possibility of applying local measures to the treatment and cure of a grave disease of an organ situated in the interior of the body, communicating with the bladder by a narrow and winding canal twelve inches long. I have shown that this was not only possible, but easy. When the orifice of the ureter has been exposed by kolpo-uretero-cystotomy, which is not a dangerous operation, irrigation of the pelvis of the kidney is scarcely more difficult than washing out the bladder. It is almost painless. I have frequently irrigated the pelvis of the kidney in my private office, and the patient has walked home without inconvenience or evil consequences.

Almost equally important is the demonstration of the tolerance evinced by the ureter in respect to these surgical procedures. In my first case I left the catheter in the ureter and pelvis of the kidney twenty-four hours, and it caused no pain or evil result whatever. The continued presence of the instrument in my second case, it will be remembered, gave

rise to pain, nausea, and vomiting, but was followed by no serious or permanent consequences. Although these observations were important, in the treatment of diseases of the pelvis of the kidney it is unnecessary, and therefore unwise, to put the tolerance of the ureter to so extreme a test. It is sufficient to introduce the catheter, and to remove it after the irrigation is finished. When this is done, not even the slight disturbance of function above described is occasioned.

Irrigation of the pelvis of the kidney in pyeletis, as a therapeutic measure, rests upon the basis of the rational treatment of disease. By it pus, blood, ammoniacal urine, bacteria, and calcareous deposits are removed. Dilatation of the ureter also allows the free escape of these irritating substances, and prevents their reaccumulation. When complete obstruction of the ureter has occurred in consequence of the impaction of a stone, the gradual dilatation of the duct, by the passage of larger and larger catheters below the seat of obstruction, would favor the descent of the calculus. If contraction of the orifice exist, as in my first case, it can be overcome by dilatation and incision of the vesical extremity of the ureter.

For the treatment of chronic inflammation of the bladder, kolpo-uretero-cystotomy is as efficient as the operation of kolpo-cystotomy.[1] An opening at one of the ureteral angles of

[1] Perinæo-cystotomy was first proposed by Guthrie, for the cure of cystitis, and in 1850 the operation was performed by Willard Parker, in order, as he said, "to open a channel by which the urine could drain off as fast as secreted, and thus afford rest to the bladder, the first essential indication in the treatment of inflammation." (New York Med. Jl., vol. vi, 1851.) This was all that I knew concerning this method of treatment in the male, and nothing had been done in the female, when, in January, 1861, I did the operation of kolpo-cystotomy, which therefore was original with me. I then, while engaged in practice in New Orleans, made an opening about the size of half a dollar in the vesico-vaginal septum, for the cure of cystitis, ulceration of the vesical mucous membrane, and concentric hypertrophy of the bladder. In consequence of the great thickening of the vesico-vaginal septum, the opening contracted to such a small size as to prevent drainage. It was then enlarged to about the size of a silver dollar. A permanent fistula was produced by this second operation. At the end of about fourteen months, when the thickening of the bladder had diminished from three fourths to one fourth of an inch, and the ulceration and cystitis had disappeared, the opening in the bladder was closed. The cure was permanent. Owing to the continuance of the civil war this case could not be published for three or four years, but it was at length reported, together with others, in 1871. (Urethrocele, Catarrh, and Ulceration of the Bladder in Females. Trans. of the New York State Med. Society, 1871).

the trigone of the bladder drains it as perfectly as one of the median line. The cystitis so commonly associated with pyelitis, both as a cause and a complication, is by this means radically treated. Perfect drainage of the bladder by removing pus and ammoniacal urine from contact with the vesical mucous membrane allows the inflammation to subside, and physiological rest of the organ brings atrophy of its thickened muscular and mucous coats.

A similar but less obvious result of the opening in the bladder is that by it physiological rest and perfect drainage of the ureters and pelvis are also secured. Normally, when the bladder fills, the urine contained in its cavity exerts a pressure in every direction upon the vesical wall, varying in amount with the degree of distension of the organ. Continuous tension and reflux of urine into the pelvis of the kidney are prevented by the valvular arrangement of the lower extremity of the ureters and vesical mucous membrane; but, in order to allow the flow of the urine into the bladder under these circumstances, the tension of the contents of the ureters and pelves must, at least momentarily, exceed that of the bladder. The pelvis of the kidney must therefore fill from time to time, and by muscular contraction inject its contents into the already more or less distended bladder.

By the operation of kolpo-uretero-cystotomy the physiological relations of the upper urinary passages to the bladder are changed. The bladder being always empty, no obstacle to the flow of the urine is afforded by the normal periodical distension of the organ. In the report of my second case, it will be remembered that the quantity of urine retained in the pelvis depended upon the position of the body previous to the passage of the catheter. If the patient had been standing or sitting before the instrument was introduced, little or no urine was drawn off; if she had been lying down, a considerable quantity was removed. It follows from these observations, that provided there is no obstruction in the ureter itself, when the orifice is exposed and the bladder drained, no obstacle is afforded to flow of the urine from the pelvis of

the kidney. In the upright position the organ is perfectly drained in obedience to the law of gravity.

From physiological rest and drainage of the pelvis of the kidney results analogous to those obtained by the same means in disease of the bladder may be expected to follow. Pus and ammoniacal urine are rapidly removed, and thus prolonged contact with the mucous membrane prevented. The thickened lining membrane and mucous coat of the pelvis of the kidney will atrophy from disuse, and its dilated cavity shrink to its normal size when the pressure of the urine is removed.

The use of the intra-vaginal drainage constitutes an essential part of the treatment. In my second case the contact of the urine with the vagina and integument in the enfeebled condition of the patient might have led to disastrous results. Vaginitis would have been occasioned, and, owing to the impossibility of keeping the skin and bed-clothes free from urine, ulceration of the buttocks, or even sloughing of the integument over the sacrum, might have been produced. Freedom from these complications and the pain and mental distress which are caused by incontinence of urine was no doubt of great importance, and contributed much toward the rapidity of the recovery of the patient and the success of the treatment.

After the suppuration of the lining membrane of the pelvis of the kidney had ceased, and the symptoms had subsided, the drainage instrument was still indispensable. During the time that the opening has been left patent, in order to secure the advantages of physiological rest and perfect drainage of the whole urinary system, the patient has been free from all the evils of incontinence of urine. As her letters show, she has been enabled by the use of the instrument to perform the duties of life and enjoy its pleasures.

The analysis of my two cases of pyelitis is now completed. In conclusion, I submit the following brief summary of the results which I conceive to be the most important that follow the employment of the new method by which they were successfully treated:

1. An artificial fistula at one of the ureteral angles of the trigone of the bladder, the result of the operation of kolpo-uretero-cystotomy, opens a new field for the accurate study of disease of the bladder, ureters, pelves, and kidneys.

2. The ureters are tolerant of surgical interference.

3. Irrigation of the pelvis of the kidney removes pus and ammoniacal urine from contact with its mucous membrane. Gradual dilatation of the ureter overcomes obstruction of the duct at its orifice and along its course. The escape of irritant substances from the pelvis is thus made more easy and rapid.

4. Physiological rest and perfect drainage of the whole urinary system cause the thickening of its mucous and muscular coats to atrophy. In consequence of the removal of the pressure of the urine, a dilated bladder, and a dilated pelvis as well, return to the normal size.

5. Intra-vaginal drainage prevents the discomfort and evil consequences of incontinence of urine, and perfects the method of treatment by removing the chief objection to its employment.

6. As compared to the grave operations of nephrotomy and nephrectomy, by this new method of treatment of disease of the pelvis of the kidney the patient is exposed to but little danger. These major operations are only done at a late period, when extensive renal disease has occurred, and, if the case does not terminate fatally, they result in mutilation of the patient. Kolpo-uretero-cystotomy should be done early. By it and the subsequent treatment the functions of all the urinary organs are preserved, and the associated lesions of the bladder cured. Congenital absence of one kidney, coincident disease of both, or pyelitis on both sides, are contra-indications to the performance of the operation of nephrectomy, but not to the employment of this new method of treatment.

DISCUSSION.

DR. E. D. FERGUSON, of Rensselaer county, said that he did not propose to discuss the paper just read; it was in many respects so novel as to call for thought and farther observation. In reference to one remark made by Dr. Bozeman, however, he wished to speak: it was as to the possible action of pregnancy in causing dilatation of the ureters. He had been present, some years ago, at the autopsy of a woman, dead the third or fourth day after confinement. He did not know the particulars of her condition during gestation, except that there had been albuminuria, and also, if he remembered rightly, eclamptic trouble. At the autopsy the ureters were found so largely dilated as to admit the little finger. There was no physical condition to account for this, unless it were the possible pressure of the gravid uterus upon the ureters as they passed over the brim of the pelvis. Below that point they were not so dilated, but above they were enlarged up to the pelvis of the kidney, which was itself somewhat dilated.

ADDRESS ON HUMAN NOSOGRAPHY.

By JOHN W. S. GOULEY, M. D., of New York County.

September 28, 1887.

[The subject of this address constitutes parts of section first and of section fourth of a forthcoming work on the principles of nomenclature and classification of the diseases of man.]

THE HUMAN BODY.

Anatomically considered, man's body is a grand complex apparatus destined to perform the one function of reproduction of its species. To that end the male and female must couple. The sperm of the male then fecundates the ovum which is within the female, and she completes the function of reproduction of the species.

This primary human apparatus is an assemblage of secondary apparatuses that are intended to perform certain special functions, some of which are designed to conserve the individual, and others to keep the body in a healthy condition and fit it for the performance of its one great function. The senses of man, each of which being the function of a special apparatus, are all subservient to the genetic sense, to the one paramount function, requiring the union of the sexes for its accomplishment.

Such are the facts that may be gleaned from anatomy: but archaeology, too, teaches its lesson. It appears that many of the ancient nations made the external genital organs of both sexes objects of worship, so much importance did they attach to generation, and that traces of phallic worship have been discovered within a comparatively recent period, even among the savage tribes of the South Sea Islands, and of North, Central, and South America.

Anatomy and archaeology having spoken their word. If a glance be now cast to chapter 1, verse 28, of the book of Genesis, it will be seen that for a long series of centuries civilised man has entertained the belief that the object of his existence is to multiply his species. The first command to man was, "Increase and multiply and fill the earth." That was to be the one function of man. The other commands, to subdue the earth and rule over all living creatures, are subordinate to the first command, to the one function. Man was to subdue the earth to the end of fulfilling that first command, and he was to rule over all living creatures and make such use of them as might be subservient to that first command. The general disobedience of that command would entail disease, death, and the speedy extinction of the species.

All organic nature is busy with the multiplication of species. In the lowest forms of animal and vegetable life this multiplication continues, until by some accident the process is interrupted. Such an interruption is one of the checks to the inordinate increase of the species; but when the process ceases, extinction is the inevitable outcome.

Man alone is prone to violate the great law of creation which impels organized beings to reproduce their kind. In these days there are too many unfortunates, who, desirous to sin without conceiving, adopt the most injurious means to effect their purpose. Among these may be mentioned the iniquity of Onan, so common among the higher classes, so demoralising and so hurtful to both the male and female.

Most persons are conscious that many of their diseases are caused by their own vices and excesses, the consequences of which are certain to assail and perhaps to destroy them. Often blinded however by their passions, or heedless of nature's inexorable laws, they fail to perceive the cause of a particular malady until it is almost if not altogether too late for its removal. Then, perhaps, they have reluctant recourse to the physician.

DEFINITION AND OBJECTS OF MEDICINE.

It often happens that certain patients long hesitate to consult the true physician, who prescribes for disease and not for symptoms, because of their vague notions of the character and scope of rational medicine—so much derided by cynics and charlatans—and of their idea that the practiser of medicine gropes in the dark in his search for the nature of diseases and for the means of their cure, and that his diagnosis is conjectural while his treatment is empirical. To a man of this class the title of doctor in medicine is a misnomer, because the "doctors" whom he knows are neither learned nor wise. He had never been able to make the distinction between the ignorant pretender and the conscientious and well qualified physician. He is at length brought face to face with a doctor whose mental qualities give him a right to the title. After a short conference, he propounds the old question, so often asked by the laity, "What is meant by medicine, and can it be ranked as a science?" The answer to this question involves a definition of a science and of an art. If knowledge, acquired by study, experiment, and observation, methodically arranged to serve as a basis upon which are established general and particular principles for guidance in the practice of an art, be accepted as one of the definitions of a science, and if an art can be defined as skill acquired in the use of means for the accomplishment of an end, then medicine is entitled to be ranked as a science and an art. These definitions may be thus condensed: Science is to know; art is to do. This is the answer to the second part of the question. The first part will be answered by a definition of medicine, and by a concise statement of its aims and of the methods employed in its study.

Medicine,[1] as related to man, may be defined as the science of man in his abnormal states, and the art of curing or of alleviating disease.

Medicine presupposes the science of man in his normal

[1]Medicine, from *mederi*, to heal.

state, and implies the arts of preserving health, of preventing disease, and of prolonging life.

Medicine and its fundamental science and associated arts lay under contribution botany, zoölogy, mineralogy, chemistry, pharmacology, physics, mathematics, and mechanics; assist in the execution of the law of the land, particularly in the special department known as Medical Jurisprudence; aid the state in the prevention of disease, through the department of State Medicine; and have their influence upon the morals of the people. The system of medical morals written by the father of scientific medicine more than two thousand years ago, is so sound in its broad principles as to have required no changes except in a few details; and the additions that have been made thereto only serve to enforce these principles. The best modern ethical essays are founded upon the Hippocratic oath which was itself erected upon the imperishable foundation of reason, truth, justice, and beneficence. There can be only one medicine, the medicine which, together with its fundamental science and associated arts, is ever seeking the truth, and whose objects are to prevent, heal, or alleviate disease, to preserve health, and to prolong life.

True medicine, founded as it is upon biology, is not fettered by dogmata, and is therefore always advancing. The student of medicine must understand the laws of life, and be acquainted with the science of man in his normal condition, and very particularly with the functions of the apparatuses of his body. Until then he is unfit to study, and still more unfit to cope with disease.

MEDICINE AND SURGERY.

Medicine has been separated into two departments: (1) Medicine proper, or, as the French still call it, internal pathology; and (2) Surgery, or external pathology. Neither designation is rational, for "medicine proper" has to deal as much with external as with internal diseases, and surgery has as much to do with internal as with external diseases.

The physician uses his hands in diagnosis and in ministering to the sufferings of his patients as much as does the surgeon. The word "surgery" meaning simply the art of healing by the use of the hands, does not necessarily imply how the hands shall be used. It does not mean that the hand must needs contain a cautery or a knife any more than a blister or a poultice, or that the hands shall reduce a hernia rather than percuss a chest or administer a potion. The term "medicine" was applied to the healing of wounds long before internal diseases were understood.

The term chirurgery, relating to manual operations, was, according to Celsus, not used until the time of Herophilus (307 B. C.). A few centuries ago the word surgeon was employed to designate the "barber-surgeon" in contradistinction from the educated healer who was styled "Master in Chirurgery."

In France, as early as the beginning of the fourteenth century, no barber-surgeon was permitted to exercise his calling until he had been examined by certain masters in chirurgery.[1]

It would seem preferable to use the word medicine as a generic term, and to arrange the science and art of medicine into certain departments in accordance with the several apparatuses of the body, such, for instance, as relate,—(I) to affections of the cephalo-rhachidian apparatus and of its subsidiary apparatuses; (II) to affections of the nutritive apparatus and of its subsidiary apparatuses; (III) to affections of the motory apparatus; (IV) to affections of the cutaneous apparatus; and (V) to affections of the generative apparatus, which, united to the urinary apparatus, constitutes the uro-genital apparatus.

General affections, involving several apparatuses, should also be arranged into proper groups.

[1] "Rule in favor of the Masters in Chirurgery of the month of August, 1301," contained in Girodat's presentation of the case of the surgeons of Paris under the title of "*Recherches Critiques et Historiques sur l'Origine, sur les Divers Etats, et sur les Progrès de la Chirurgie en France.*" Paris, 1744, p. 435.

THE PHYSICIAN.

The ancient Greeks called the physician ἰατρος, the healer. The ideal physician should, however, be more than a mere healer of wounds or a prescriber of pills and potions.—Handicraft and shrewdness are his lowest attributes.—He should, in a broad sense of the word, be a philanthropist (implying not only a *lover* but a *knower* of man), and a close, thoughtful observer of the nature of the human apparatuses, the disorders of whose functions he has to interpret. He should investigate questions relating to the structural and other characters of diseases. He should devise means for the cure of diseases, and formulate rules for their prevention. He should be both *iatrosophista* and *iatrotechna*, learned in the science and skilled in the art of medicine.

DEFINITION AND GENESIS OF DISEASE.

In this connection it will be proper to answer the commonly asked question, What is meant by disease? Disease is a deviation from the normal state of the whole or of any part of the body. The term disease[1] was long ago introduced into medical language to express the idea of bodily uneasiness or distress such as may be caused by an injury, by an interruption or a disturbance of vital functions, or by an alteration in the structure of an organ or of several organs of an apparatus or of all the apparatuses of the body. Hence it is that diseases have been classed into functional and organic diseases. But disease of an organ always disorders, in a greater or less degree, the function of the apparatus to which it belongs, and sometimes disorders the functions of several apparatuses. Therefore such a classification is faulty and misleading. The affections of the human body may be,—

1. Congenital, resulting from vices of the primary conformation.

[1] The etymology of the word disease, though having little scientific value, is not without interest. This word is derived from *dis*, without, and *ease*, through the old French *désaise*, lack of ease, uneasiness, distress.

2. Hereditary, transmitted by progenitors.
3. Primary, arising from more or less well known causes.
4. Secondary, consequent upon preëxisting disease: in this case the word pathengenetic[1] expresses briefly the idea of a disease springing from another disease.
5. Traumatic, resulting from injuries; or
6. May be the outcome of errors of diet, of the effects of climate, of parasitic invasion, and of gaseous, mineral, vegetable, or animal poisons, including ptomaines and leucomaines.

Although these affections number many species, the morbid states and morbific processes from which these species originate are comparatively few, and are comprised under the following captions: (1) Alterations in the composition of the blood; (2) disturbances in the circulatory apparatus; (3) pathengenetic alterations of structure; (4) retrograde metamorphoses; (5) new growths; (6) granulation growths; (7) cysts; (8) stones; (9) injuries; (10) monsters; (11) extraneous bodies; (12) parasites; (13) poisons; (14) functional disorders.

SYNOPSIS OF THE MORBID STATES AND MORBIFIC PROCESSES OF THE BODY, BEING A SUGGESTION OF A GROUND-WORK FOR THE CLASSIFICATION OF DISEASES.

I. Alterationes in quantitate, in qualitate, et in compositione sanguinis (alterations in the quantity, quality, and composition of the blood).

1. Hyperaemia (superabundance of blood).
2. Hypoaemia (insufficiency of blood.)
3. Hyperhydraemia (increase of blood-water).
4. Hypohydraemia (decrease of blood-water).
5. Hyperinosaemia (increase of blood-fibrin).
6. Hypoinosaemia (decrease of blood-fibrin).
7. Hyperleucontaemia[2] (increase of blood albumen).
8. Hypoleucontaemia (decrease of blood-albumen).
9. Hyperalonaemia (increase of blood-salts).

[1] The word pathengenetic was lately coined by Dr. Alfred L. Carroll.
[2] λευκόν, the white of an egg—*albumen*.

10. Hypoalonaemia (decrease of blood-salts).
11. Hyperchromataemia (increase of blood-color).
12. Hypochromataemia (decrease of blood-color).
13. Hyperleucocythaemia (increase of white blood-cells).
14. Hypoleucocythaemia (decrease of white blood-cells).
15. Hypererythrocythaemia (increase of red blood-cells).
16. Hypoerythrocythaemia (decrease of red blood-cells).
17. Hyperlipaemia (increase of blood-fat).
18. Hypolipaemia (decrease of blood-fat).
19. Hyperphysaemia (increase of blood-gas).
20. Hypophysaemia (decrease of blood-gas).
21. Hyperglycaemia (increase of blood-sugar).
22. Hypoglycaemia (decrease of blood-sugar).
23. Acetonaemia (acetone in the blood).
24. Ammoniaemia (ammonia in the blood).
25. Hyperuraemia (increase of blood-urea).
26. Hypouraemia (decrease of blood-urea).
27. Hyperuricaemia (increase of blood-uric acid).
28. Hypouricaemia (decrease of blood-uric acid).
29. Cholaemia (bile in the blood).
30. Hypercholesteraemia (increase of blood-cholesterin).
31. Hypocholesteraemia (decrease of blood-cholesterin).
32. Melanaemia (black pigment in the blood).
33. Septicaemia (putrid infection of the blood).
34. Pyosapraemia (putrid-pus infection of the blood).

II. Turbationes in apparatus circulationis (disturbances in the circulatory apparatus).

1. Ischaemia[1] (arrest of the blood).
2. Athroisaemia[2] (blood accumulation, congestion).
3. Phlegmasia[3] (inflammation).
4. Lymphexomosis (transudation of lymph).
5. Lymphorrhagia (flow from a rent lymph-vessel).
6. Haemorrhagia (flow from a rent blood-vessel).
7. Haemodiapedisis (oozing through blood-vessel walls).
8. Thrombosis[4] (coagulation).
9. Embolismus[5] (plugging).

[1] Anaemia localis (local capillary anaemia).

[2] Athroisaemia, from ἄθροισμα, accumulation, and αἷμα, blood. Athroisaemia activa et passiva. Effusio serosa.

[3] Exudationes.

[4] Angiohaemothrombus (blood-vessel clot), cardiohaemothrombus (heart clot).

[5] Angioembolus (vessel plug).

III. Alterationes structurae pathengeneticae (pathengenetic alterations of structure).

1. Hypertrophia (hypertrophy).
2. Hypotrophia (hypotrophy).
3. Atrophia (atrophy.)
4. Auxesis (enlargement, increase).
5. Ectasis (dilatation, expansion).
6. Stenosis (contraction, stricture).
7. Echmasis (obstacle, obstruction).

IV. Metamorphoses retrogrades (retrograde metamorphoses.)

1. Necrosis[1] (necrosis, death).
2. Meiosis (decrease).
3. Degeneratio[2] (degeneration).
4. Infiltratio[3] (infiltration).

V. Neoplasmata (new-growths).

(1) *Desmoneoplasmata (connective tissue neoplasms).*

1. Endothelioma (endothelioma).
2. Sarcoma (sarcoma).
3. Inoma (fibroma).
4. Myxoma (myxoma).
5. Neuroglioma (neuroglioma).
6. Lipoma (Lipoma).
7. Chondroma (chondroma).
8. Osteoma (Osteoma).

(2) *Myoneoplasmata (muscular tissue neoplasms).*

1. Myoma[4] (myoma).

(3) *Neuroneoplasmata (nerve tissue neoplasms).*

1. Neuroma (neuroma).

(4) *Angioneoplasmata (vascular tissue neoplasms).*

1. Angioma[5] (angioma).

(5) *Epithelioneoplasmata (epithelial neoplasms).*

1. Epithelioma (epithelioma).
2. Carcinoma (cancer).
3. Adenoma (glandular growth).

[1] Necrosis—coagulationis, colliquativa, et caseosa. Gangrena humida et sicca. Ulceratio.
[2] Degeneratio—granulosa, adiposa, amyloides, colloides, mucoides, hyalina, inoides, et sclerosa.
[3] Infiltratio—adiposa, pigmentaria, calcarea, et urica.
[4] Rhabdomyoma, leiomyoma.
[5] Haemangioma, lymphangioma.

VI. Blastomata (granulation growths).

1. Syphilis (syphilis).
2. Ulcus chancroides (chancroid ulcer).
3. Lepra (leprosy).
4. Tuberculosis (tuberculosis).
5. Lupus (lupus).
6. Equinia (glanders).
7. Actinomycosis (actinomycosis).
8. Rhinoscleroma (rhinoscleroma).

VII. Cystides (cysts).

VIII. Lithi (stones).

1. Sialolithus (salivary stone).
2. Chololithus (gall stone).
3. Enterolithus (intestinal stone).
4. Urolithus (urinary stone).
5. Prostatolithus (prostatic stone).
6. Phlebolithus (vein stone).

IX. Traumatismi (traumatisms), including all kinds of injuries to the body.

X. Teratismi (teratisms), including all kinds of congenital anomalies of the body.

XI. Corpora extranea (extraneous bodies), including the lodgment, in the body, of all kinds of foreign substances.

XII. Parasiti (parasites).

1. Entozoa (entozoa).
2. Ectozoa (ectozoa).
3. Entophyta (entophyta).
4. Epiphyta (epiphyta).

XIII. Venena (poisons), including all kinds of gaseous, mineral, vegetable, and animal poisons.

XIV. Vitia functionum (disorders of the functions).

1. Perversio (perversion).
2. Deficiens (deficiency).
3. Immoderatio (excess).
4. Diminutio (diminution).
5. Suspensio (suspension).
6. Abolitio (abolition).

COMMENTS ON SOME OF THE TERMS USED IN THE SYNOPSIS OF MORBID STATES AND MORBIFIC PROCESSES.

The names given to the morbid states and morbific processes of the body should be changed whenever the true nature of these states and processes is discovered. Many of the names only convey an erroneous idea of the condition which they are intended to express.

The term *inflammation*, for instance, is used under protest until a better term shall be agreed upon by the profession. The coinage of this word is based upon symptoms, and not upon morbid properties. When the exact pathic condition of this so-called inflammatory process is clearly defined, the proper name will be found; and when this is found, words will probably be coined in place of those ending in *itis* to denote inflammation of particular parts of the body.

Auxesis[1] is placed under the caption alterations of structure because increase in bulk of an organ may and does occur independently of what is called inflammation. This word is substituted for hypertrophy, which ordinarily is improperly used in the sense of augmentation. Hypertrophy neither means, nor does it even imply, enlargement. It signifies over-nourishment, the opposite of no nourishment or atrophy. When the body is over-fed, the organs do not of necessity enlarge, but much of the surplus nourishment is deposited, in the form of fat, under the skin, in the mesentery, and around the kidneys: this is an example of true hypertrophy. The organs of the human body receive nourishment to the extent of their requirements, neither more nor less, whatever may be their condition. When, from disease, an organ slowly increases in size and afterwards does not tend to decrease, the calibre and length of its nutrient arteries are often found to be increased, and the thickness of the walls of these vessels is also proportionately augmented. This condition of the blood-vessels is not ordinarily called hypertrophy. It is assuredly a great inconsistency to apply the term hypertrophy

[1] Auxesis, from αὔξησις, increase, augmentation, enlargement.

to an enlarged organ and not to its enlarged arteries. The careful study of the morbid anatomy of enlarged organs shows that the auxesis has a cause entirely foreign to over-nourishment. The disturbing element may or may not be carried to it by the blood, and when it is so carried, the enlargement is due to this disturbing element, and not to the quantity of blood, which is only proportionate to the demand of the organ for its adequate nutrition. A liver enormously enlarged from cancerous disease is not generally called hypertrophied, and yet it may receive one third more blood than when it was in a normal condition. A large, fatty liver is called a fatty, and not a hypertrophied, liver. The well developed muscles of the athlete are not over-nourished. If they were, he would probably be unfit to perform his feats of strength and agility. The enlarged heart is not over-nourished; it is as likely to be inadequately fed.

The only other instance of hypertrophy is that which occurs in the beginning of certain varieties of local inflammation, when, for a short period, the parts are over-fed owing to an undue activity in the circulation. This may soon be followed by stasis of blood in the capillaries. During the static period there is hypotrophy—diminished nutrition, under-feeding; and if the stasis persist, nutrition ceases. Here, then, is true atrophy. The part that is no longer nourished dies. This is what is commonly called mortification, which is regarded as an unfavorable termination of the inflammatory process. Marasmus, and the emaciation which occurs in phthisis pulmonalis, or in the course of febrile disorders such as typhus and typhoid fevers, in the course of cancerous affections, in chronic pyelo-nephritis, and in saccharine diabetes, exemplify hypotrophy. An organ which has decreased in size may be called meiomous.[1]

Hypertrophy and atrophy are correctly coined, and good words in their proper places. It is only their misuse that is here criticised.

The words hypertrophy and atrophy of the kidneys, which

[1] Meiomous, from μείωμα, a decrease.

are employed in the English nomenclature of diseases in the year 1869, are rejected in the revision of 1885. The hypertrophy referred to was presumably applied in 1869 to the form of disease now called in the revised edition of 1885 "large white kidney of nephritis," which is a condition of auxesis or enlargement. In like manner atrophy was employed in 1869, but to express the opposite condition now known, and classified in the revised edition, as contracted kidney, which is a decreased or meiomous kidney, a retrograde metamorphosis. It seems clear in both these instances that the words hypertrophy and atrophy, used in 1869 in the case of the kidney, failed to convey an adequate idea, in the minds of the revisers, of the pathic conditions in question, or else in the revision of 1885 they would not have been abandoned.

If, therefore, this interpretation of the omission be correct, why should it not be applied to all cases where the word hypertrophy is used in the sense of increase in bulk, and atrophy in the sense of diminution?

Auxetic affections may be echmatic, as in certain types of enlargement of the prostate, or may *not* be echmatic, as in uniform enlargement of the prostate, which does not impede the flow of urine. Some auxetic affections are neoplastic, others are pathengenetic.

The words hypertrophy and atrophy will not be employed in this work except when in their true meaning they are absolutely required.

Stenosis[1] is generally the outcome of inflammatory action. Stenotic affections are pathic conditions of the excretory ducts and of hollow viscera, by which these ducts are narrowed and the viscera lessened in capacity, as in the case of stenosis or stricture of the urethra, or in the case of a permanently contracted bladder with markedly diminished capacity. A stenotic affection may or may not be echmatic. It is often echmatic in stricture of the urethra, but not in stenosis of the bladder. Stenotic affections are sometimes congenital, some-

[1] Stenosis, from στενόω, to make narrow, to contract.

times traumatic, but most frequently they are pathengenetic;[1] that is to say, are the sequelae, the offspring of, or are engendered by, a preëxisting morbid condition, as, for instance, the strictures which result from urethritis, or the stenosis of the bladder springing from inflammation of that viscus.

Ectasis[2] is a condition of expansion or dilatation of certain serous cavities, hollow viscera, excretory ducts, and lymphatic and blood vessels. Stenotic affections are pathengenetic, and due to inflammatory action, or to obstruction from disease or from the lodgment of a foreign body. Morbid dilatation of the bladder, general or local, is an ectatic affection. A so-called hydrocele of the tunica vaginalis gives rise to ectasis of the tunica vaginalis.

Echmasis[3] may result from inflammation, from a neoplasm, or from the lodgment of a foreign body. Echmasis is here used in preference to epischesis, of which Vogel makes a class and Cullen an order. Epischesis, from επεχειν, to hold up, to check, to restrain, is defined as a suppression of excretions. Echmasis defines more exactly the character and the cause of the suppression of the excretion, as in the case of retention of urine in the bladder, which generally has for its cause a material obstruction in the urinary passage, such as stricture of the urethra or enlargement of the prostate. Echmatic affections may therefore be also stenotic or auxetic, and they may be pathengenetic; that is to say, may spring from or be engendered by a preëxisting pathic condition.

Blastoma[4] should be substituted for granuloma, which is a hybrid word, meaning, according to Dunglison, "a morbid product formed by partition and multiplication of the connective tissue cells into groups of others resembling lymph cells, lying in an intercellular substance, with a tendency to fatty degeneration, as elephantiasis *(Graecorum)*, lupus, etc."

[1] Pathengenetic, from παθος, a disease, and εγγευης, sprung from. (Carroll.)

[2] Ectasis, from εκ, out, and τεινειν, to stretch, expand, or extend.

[3] Echmasis, from ἔχμα· obstruction, obstacle, hindrance.

[4] Blastoma, from βλαστούς, shoot, bud, germ, and ωμα.

The same author defines a granule as "a small grain, a compact particle, a cytoblast." The French name for granulation is *bourgeon charnu*, fleshy bud. Blastoma seems to express the meaning intended to be conveyed by granuloma, and something more, for the blastomata are now regarded by many histologists as affections caused by the presence of micro-organisms, and on this account also the word blastoma is preferable to granuloma, which, besides being an ill-formed word, fails to convey the idea of a germ disease.

The term *disorder*[1] is applied to functional affections, *e. g.*, disorder of a function, or functional disorder. An organ is said to be diseased, but a function disordered. Functional disorders are caused by disease of one, or of more than one, organ of an apparatus. It is often difficult and sometimes impossible to ascertain which of the organs of an apparatus is so diseased as to disorder the function of that apparatus.

Of the six genera of functional disorders enumerated in the synopsis of morbid states and morbific processes, only four were formerly recognised. It has seemed proper to add *deficiency* (2), which is exemplified by the lessening of urea in the urine, and *suspension* (5), which is exemplified by anuria, and also by retention of urine.

PRACTICAL CONSIDERATION OF HUMAN NOSOGRAPHY.

As preliminary to the practical consideration of human nosography, the following questions may with propriety be propounded:

1. Is there need of classification of any kind?
2. If so, what should be the basis of the classification of diseases?
3. What should be the character of the nomenclature of diseases?
4. What should be the method of the classification of diseases?

An answer to each of these questions will now be submitted to the decision of the medical profession, for no

[1] Disorder, from *dis*, without, and order.

official nosography should be established except with the concurrence of the medical profession.

1. IS THERE NEED OF CLASSIFICATION OF ANY KIND?

Despite the well known aphorism, "System is the Ariadnean thread without which all is confusion," some of the highest authorities in science have been opposed to methodical arrangement. Among them may be cited the celebrated Buffon. Many of the physicians of the present time do not approve of classification, notwithstanding the fact that medicine is a science only by reason of the methodical arrangement of diseases, and that these physicians themselves are constantly classifying,—for they think, and therefore classify: and it is a fact that to think is to classify; therefore in thinking they classify *nolens volens*. To think of an object is to recognise the properties which differentiate it from other objects, and consequently place it in its proper class. Particular illustrations need not be given. But to make a general classification accurate and useful requires profound thinking, a good understanding, sound judgment, persevering study, careful observation, persistent labor, untiring industry, and the coöperation of many men possessing these qualities. Nosotaxy, however, to be of practical utility to the medical profession, and of much benefit to mankind, requires more than the coöperation of many men. It exacts the prompt and substantial aid of the very great majority of all true physicians in the world.

The answer to the first question is that there is great need of a classification of the diseases of man, established upon a proper basis, which shall constitute an epitome of the science of medicine.

2. WHAT SHOULD BE THE BASIS OF THE CLASSIFICATION OF DISEASES?

During this century nosography has not advanced so rapidly as might have been reasonably expected. Among the chief reasons of this hindrance are,—(1) that the establish-

ment of a proper basis for its development has never been agreed upon by the medical profession, and (2) that no particular system of classification has been officially adopted by the profession. Individuals and certain nations having each some special system of classification and nomenclature of diseases, with no apparent aim toward uniformity. In sundry nosographical arrangements, the words groups, sections, classes, orders, families, tribes, genera, and species are so loosely and carelessly employed that it is difficult to understand the meaning which these terms are intended to convey, used, as they often are, in violation of established principles of classification; for many classifiers employ them arbitrarily, and do not take the pains to give their own definitions of these arbitrary terms.

The starting-point in nearly all the systems of nosography is the symptom. This has led astray many nosographers, who, mistaking symptoms for diseases, placed these symptoms in the category of diseases, notwithstanding the existing excellent rules for the guidance of the student of nosography. The system of Cullen, having been judged the best, was for many years in general use, and yet it was full of the most glaring errors, some of which he acknowledged in after years. Many of Parr's suggestions were excellent, but his system was as ill founded as those of his predecessors. Pinel's "*nosographie philosophique*," which superseded the nosology of Cullen in France, has long been obsolete. It failed, even after a very considerable number of revisions, probably because it was established upon the same faulty basis as that of former systems. The nosographical contributions of Récamier, of Richerand, and of others had no better success. More than forty years ago Dr. Williams classified and tabulated certain diseases upon a physio-pathological basis, but there halted.

It seems clear that the great defect of all these systems is the lack of a stable basis upon which to erect the structure of nosography. This defect was long ago realized, but not remedied, and nosography had already shown signs of decay,

when it was almost entirely reconstructed by Dr. William Farr and by the Royal College of Physicians of London. But even the modern English system is full of inconsistencies, although it is declared to be founded upon anatomy.

It is noteworthy that nearly all the early general nosographers were at either extreme of adopting very few or very many classes, and that they failed to agree as to what should constitute classes, orders, genera, species, or symptoms, for these are scattered throughout what at first sight seem to be the most methodical arrangements. Thus phlegmasiae are placed among classes by Sauvages, Linnaeus, and Sagar, and among orders by Cullen, Vogel, Macbride, and Good. These, and many other blemishes already pointed out, occur from the time of Sauvages to that of Hosack, and are owing partly to the fact that too little attention has been bestowed upon species, notwithstanding the caution of Cullen, who, however, fell into the error he so much wished to avoid, and partly to the state of knowledge of physiology and morbid anatomy at that epoch. Although Dr. Good based his nosology upon physiology, he reäffirmed many of the errors of the older authors.

This want of agreement, and the absence of a substantial foundation and of associated harmonious labor, have given rise to the greatest confusion in the use of terms and in arrangement. This confusion, and the tendency of each nosographer to reproduce the inaccuracies of his predecessors, have greatly impeded the progress of nosography, and have led to much unfavorable criticism, and to the frequently asked question, Of what use is nosography? This question is now often sneeringly asked by those who fail to appreciate the fact that without the existing systematic arrangement of diseases they could not have learned, and could not intelligently and successfully practise, medicine. In the beginning of this century nosography was not regarded with much favor by many learned physicians both in England and on the continent of Europe, and the mass of the profession spoke of it contemptuously. Dr. Parr, in commenting there-

on, says,—"Nosology is seldom mentioned but to be ridiculed and despised."[1]

Under the same head, Parr says,—"Systems are the work of our own minds, for nature advances by almost imperceptible shades, and where we cannot point out the termination of one family and the commencement of another, it is only confessing that the intermediate link is unknown: thus, when our knowledge advances, the advantages of our system lessen, for our limits are lost. . . . If a foundation could be obtained, it was apparently by considering the disorder as connected with an internal change, which would then afford what might be styled an object, whose properties we might examine. . . . The great advantage of nosology is distinction, discrimination, etc. . . . We still want a *delineatio morbi* in imitation of the *delineatio plantae* in Linnaeus."

How can proper distinction, discrimination, and a *delineatio morbi* be made unless nosography have a stable foundation, such, for instance, as can be built from anatomy? As early as the year 1801 Bayle was of opinion that nosography should be founded upon anatomy; but the idea was never fully carried out, although Alibert named his families of diseases in accordance with the organs affected, although Richerand and others made similar attempts, and although the modern English system is avowedly founded upon anatomy.[2]

It was an error of much consequence on the part of the nosographers to make symptoms the foundation of the science instead of using them as *one* of the means by which to discover individual diseases. An anatomical foundation would in no way have lessened the importance of symptomatology and of semeiology, for, however substantial might have been the foundation of nosography, its superstructure could never have been built without proper methods of detecting and of

[1] "The London Medical Dictionary," London, 1809.

[2] The latest work of Sauvages (published a year after his death) contained a symptomatical, an etiological, and an anatomical arrangement, but the etiological and anatomical were held in entire subordination to the symptomatical arrangement.

expressing the characteristics of diseases. It is chiefly by the aid of symptoms and signs that individual affections are recognised and species established, and it is from species that the superstructure rises.

While due consideration should be given to symptoms, it would, in the present state of science, seem unwise to attempt to make a *delineatio morbi* solely upon the basis of symptoms, for, without placing under contribution aetiology and pathoanatomy, it would not be possible to fix a term for every circumstance in which the morbid conditions might vary. For example: In the case of a deformity, the description of its external characters would be insufficient, and its definition inexact if the cause and pathic properties were not set forth. This cause may be an injury, or a previous disease, or the deformity may be congenital. Again: An echmatic affection may be owing to a congenital anomaly, to a previous disease, or to an injury. A tumor may consist of fat, or of muscular or fibrous tissue, of cartilage, or of bone, or of cellular elements which are rapidly proliferated to be soon destroyed. In such cases, symptoms would indicate simply the existence of a tumor of a certain size and shape and its immediate effects, but not its anatomical properties.

To make the description of an abnormal condition of the human body accurate and its definition exact, all the circumstances connected with it should be closely scrutinised and analysed, whether they be external manifestations, or physical signs brought to light by the aid of certain tests systematically applied, as, for instance, in the case of the sense of hearing in auscultation, of touch in palpation, or of other methods of physical exploration. At the same time the greatest importance should be attached to the causes and to the pathic properties of these conditions as revealed by the modern appliances for determining the anatomical and other characters of diseases, such as chemical tests, the electrical apparatus, the microscope, the polariscope, and other instruments of precision.

Cullen speaks of the difficulty he experienced in determin-

ing what is really a true species and what is only a variety, and finds it necessary to enumerate many varieties. This difficulty doubtlessly arose from his adopting a system based upon symptoms rather than upon anatomy. Some of his rules for discriminating between species and varieties would now be of little value, and must have been very unsatisfactory in his own time. For instance, it could not have been easy to form a clear conception of what is "a symptom of a symptom," or of "a symptom of a cause." The "symptoms of symptoms" have been defined as "effects which result from the symptoms of a disease, but which are not necessarily allied to the disease," and the following example is given: "Thus the debility which results from the frequency of the alvine evacuations in dysentery is a symptom of symptoms." All this has been handed down from the time of Cullen, and seemingly accepted without demur or comment on the part of the profession, and recorded by such authors as Dunglison, Littré, Robin, and other writers of eminence. From symptoms effects cannot arise, for symptoms are only manifestations of a morbid condition which is itself the effect of a cause. The idea of an effect arising from a manifestation is therefore most irrational. The debility which results from such phenomena as the frequent alvine evacuations in dysentery is a consequence and not a symptom of the dysentery. The outward manifestations of dysentery are the frequent bloody alvine evacuations accompanied by tenesmus. The analysis of these symptoms furnishes a sign upon which to base the diagnosis of the disease.

There are no "symptoms of a cause" any more than there are "symptoms of symptoms." The cause produces an effect—disease—which effect manifests itself by certain general or local symptoms.

Of late years it has been proposed to employ two classifications and nomenclatures,—one for the clinician, based upon the characters of the symptoms of disease, and one for the pathologist, to be used in the autopsy room. Such a system would be entirely unnecessary if a single classi-

fication and nomenclature were placed upon a proper foundation.

The modern botanical classification is based upon the reproductive organs of plants,—that is, upon anatomy.

Zoölogical classification is likewise based upon anatomical characters, and this basis was adopted to a certain extent by Buffon notwithstanding his general opposition to methodical arrangement, by Pennant in his "History of Quadrupeds," published in 1781, and by other zoölogists of their time.

Looking at the inorganic world, it will be seen that the classification of minerals is based upon their chemical properties. The system adopted by the mineralogists includes classes, orders, species, and varieties.

The chemical nomenclature of the present, the result of more than a century of arduous labor, is based upon the composition of compound substances, so that the name of a chemical compound generally indicates its exact composition.

All systematic studies of those sciences wherein the greatest advances have been made during this century are established each upon a rational and substantial basis, except medicine; and why the good example set by the naturalists has not been more generally followed by medical writers it is not easy to explain.

A nosography based upon symptoms cannot be accurate, and must necessarily fall.

To be of practical utility, the classification of diseases should be based upon anatomy. This is the answer to the second question.

In this work, therefore, an attempt is made to raise the superstructure of nosography upon this foundation.

DESCRIPTION AND DEFINITION.

Summarising what has already been stated as to the scope of nosography, it is found to include (1) the description, (2) the definition, (3) the nomenclature, and (4) the classification, of diseases.

The *description* of a disease is the setting forth in detail of its cause, nature, pathoanatomy, and symptoms.

The *definition* of a disease is the statement of its peculiar, dominant, and constant characteristics so concisely and clearly that it can be readily recognised.

Description and definition are too often confounded. An exact definition is the summary of an accurate description. It takes from such description only what is essential to precisely characterise a disease and distinguish it from any other disease. An exact definition can therefore be deduced from the analysis only of a complete description.

In the description of a disease, there may be symptoms and other conditions which are common to two or to more than two diseases. To introduce such characters into a definition would vitiate and render it useless.

The methodical nosographer first describes a morbid condition. From this description he extracts the definition, and from the definition obtains the correct name of the disease, which he accordingly classifies.

3. WHAT SHOULD BE THE CHARACTER OF THE NOMENCLATURE OF DISEASES?

Nosonomy,[1] or the nomenclature of diseases, is that division of nosography about which there is the least agreement among both ancient and modern authors; consequently, of all scientific nomenclatures, that of medicine is confessedly the most defective. Of the many good rules prescribed for naming diseases, few have been observed, and many of the most absurd and meaningless terms, anciently adopted, are still obstinately retained. A pernicious habit of inaccuracy among writers has been the outcome of this faulty nomenclature, which now proves to be one of the greatest detriments to the science and art of medicine. Although repeatedly pointed out, no concerted international action has been taken

[1] Nosonomy, from νόσος, disease, and ονομα, name. The words know and name are said to be traceable to the same root. Diseases, to be properly named, should therefore first be well known.

for the remedy of this evil. The nearest approach to reformation is indicated by the work done in the past thirty years by the medical profession of the advanced European nations, more particularly of England. Most of the labor, however, was individual, and performed by the late Dr. William Farr, of London, who is entitled to the highest praise for his devotion to this section of nosography. He has done much to advance nomenclature, but there remains much more of the same kind of work to be accomplished.

Sir W. Aitken, who has also given great attention to the question of nomenclature, summarises "the considerations which have generally regulated the naming of diseases" as follows: "(1) Some names have been taken from the part affected, *e. g.*, peripneumonia, podagra, opthalmia, dysentery; (2) the most characteristic symptoms have furnished the name, *e. g.*, ileus, tenesmus, paralysis, diarrhoea, dyspnoea, coma; (3) some names have been taken from these two circumstances combined, *e. g.*, cephalalgia, otalgia, cardialgia, odontalgia, hysteralgia; (4) an alteration of tissue, upon which subsequent changes depend, being recognised as the essential element of the disease, it is named accordingly, *e. g.*, pleuritis, peritonitis; (5) such alteration not being discovered, the first tangible link in the chain of causation has been used instead, *e. g.*, melancholia, cholera, typhus; (6) when a lesion tending to sudden death at once follows the application of a cause, that cause may name the disease, *e. g.*, lightning, prussic acid, arsenic, scald, sun-stroke, cut, stab, frost-bite, etc.; (7) a considerable number of names of diseases have been derived from some imaginary resemblance to external objects, *e. g.*, elephantiasis, cancer, polypus, anthrax, etc.; (8) there are still many names the origin of which it is not easy to trace."

Faulty as are these and many other terms, it is extremely difficult to fill their places with suitable expressions. That this will in time be accomplished—perhaps, however, not until two or three generations of physicians shall have passed away—is reasonably to be anticipated. Meanwhile it is to

be hoped that during the present generation good substitutes will be offered for such caconymous terms as podagra, rheumatism, apoplexy, melancholia, ileus, dysentery, diarrhoea, cholera, typhus and typhoid fevers, variola, diphtheria, hydrophobia, elephantiasis, lupus, leprosy, anthrax, cancer, chancre, chancroid, scrofula, syphilis, and a host of other equally inappropriate names of diseases.

Many of these terms are used in this essay—but under protest—until, by general agreement, correct terms shall be substituted.

"The perfection of a science depends, in no inconsiderable degree, upon the perfection of its language; and the perfection of every language upon its simplicity and precision."[1]

The language of medicine should be euphonious, simple, expressive, and accurate, for its object is not only to describe and define diseases with precision, but to mirror the medical experience, wisdom, and genius of the past as well as of the present. Nosographical nomenclature is the most important part of medical language, and consists of the technical terms therein used. This nomenclature should be based upon the structural characters of the affections of the human body; therefore the names given to diseases should convey to the mind an exact idea of the morbid conditions which these names are designed to express; at least a strong endeavor should be made toward the attainment of that end. As a general rule these names should be Latin or Latinised Greek, or of Greek or Latin derivation, but should not be compounded of Latin and Greek. To avoid confusion, it is desirable that one name only be adopted for each individual disease. When a disease already bears several names, if one of these be accurate it should be adopted to the exclusion of the superfluous or improper names; otherwise a correct term should be coined, and the other names should be placed under the head of equivalents, synonyms, or caconyms, as the case may be.

The names of men applied to diseases are extremely objec-

[1] John Mason Good.

tionable, convey no idea of the nature of these diseases, and even fail to flatter vanity. It happens sometimes that a disease bears the names of two persons whose description thereof is the same. May it not also happen that one and the same disease is very differently described by two or even three persons, each giving his name to the disease, so that two or three diseases may be enumerated where only one exists? The resulting confusion and perplexity would, in such a case, be most discouraging to earnest students. The fashion of giving men's names to diseases has continued through so long a series of years that it has grown into a confirmed and mischievous habit. If this sentimental but mistaken notion of honoring or of rewarding merit could have been limited, no great harm would have ensued. The evil is, however, already an offensive blot upon the nomenclature of medicine, and threatens to mar the best pages of medical literature. Will it not be a most agreeable relief to the senses of the heedful reader when authors shall have banished from their treatises such terms as Addison's disease, Basedow's disease, Bright's disease, Charcot's disease, Duchenne's disease, Dupuytren's contraction, Graves's disease, Hodgkin's disease, Ménière's disease, Pott's disease, and very many more of kindred names, which express no notion of the nature of the affections bearing such pseudonyms?

The names of regions of country, *e. g.*, Barbadoes leg; of animals, *e. g.*, lupus, elephantiasis; of vegetables, *e. g.*, hay fever; of some of the elements, *e. g.*, St. Anthony's fire; and other names, too absurd and too numerous to particularise, have been given to diseases.

The same faulty nomenclature exists in the fundamental science and associated arts of medicine.

It is to be hoped that the much desired general reformation in medical nomenclature will soon begin; but the bad foundation must first be sapped by a radical change in the nomenclature of the fundamental science and associated arts of medicine.

The answer to the third question is, that the nomenclature

of diseases, to be exact, should be based upon the true nature of morbid conditions, and should be characterised by simplicity, brevity, and accuracy.

4. WHAT SHOULD BE THE METHOD OF THE CLASSIFICATION OF DISEASES?

Nosotaxy, or the classification of diseases.—The fourth division of nosography relates to the grouping of those diseases that have been described, defined, and named, and to their arrangement into distinct classes, orders, genera, and species. This is called taxonomy,[1] or classification.

Next to nomenclature, classification has exhibited the most diversified and incongruous views. At the close of the last and in the beginning of this century classification was in such fashion that every prominent physician thought himself bound to construct a new classification of diseases. The result was that no two systems agreed, and that nearly all classifiers not only repeated the heresies of their predecessors, but often made greater mistakes, so that nosography soon fell into disrepute and contempt. The excessive zeal displayed by many of these classifiers in endeavoring to promote nosography, and their premature publication of imperfect and ill-digested systems, are among the main causes of the retardation of its progress.

Sir W. Aitken, in his warm advocacy of methodical arrangement, predicts a glorious future for nosography. He says, under the head "Principles of Classification,"—

"A perfectly philosophical or natural system of classification aims at having the details of its plan to agree in every respect with the facts as they exist in nature, and to be, as it were, a 'translation of the thoughts of the Creator into the language of man.' To effect this end, arrangements, as they naturally exist, require to be traced out, not devised. The tracts in which our knowledge is as yet deficient may be shortly indicated under the following heads: (1) The affini-

[1] Taxonomy, from τάξις, arrangement, and νόμος, a law; and, for the sake of precision and brevity, nosotaxy, the classification of diseases.

ties or alliances of diseases with each other; (2) the morbid anatomy of diseased parts; (3) the communication, propagation, inoculation, generation, development, course, and spontaneous natural termination of diseases; (4) the connection of the phenomena recognised during life with the facts of morbid anatomy; (5) the geographical distribution of diseases; (6) the succession of diseases, so far as they can be traced through past ages; the peculiarities they have exhibited at different periods in the world's history, or within comparatively recent cycles of years." "But," he further says, "the time has not yet come for a classification on a basis so comprehensive—simply because the material does not yet exist; and attempts to make so-called natural systems of arrangement must end in disappointment, on account of the uncertain and fluctuating data on which they must be based."

It is true that the whole of the material does not yet, and may never, exist for "a perfectly philosophical or natural system of classification," but there is enough good material at hand, which, if wisely used, will greatly improve the present systems of classification. It surely is not the part of wisdom to wait an indefinite time to begin this work. Had the early nosographers waited for the "proper time to come," this science would to-day scarcely be in existence. But they quickly made use of such material as was then at hand, and their labors have led largely to the advances which are at present enjoyed. The succeeding generations of nosographers will doubtless profit by the good work—and by the errors, too—of the preceding, and it may possibly be many centuries before the fond hope of Sir W. Aitken can be realised, but the beginning should be made now.

The task of improving the classification of diseases may be begun by individuals; but individual labor should, with good grace, be submitted to the criticism and correction of other individuals and of organised associations of the medical profession, first of the country of these individuals, then of all countries of the world.

The study of the nosography of the past, showing, as it does, such great diversity in the many systems, such lack of agreement among the nosographers, such confusion in classification, and such eccentricity in nomenclature, must needs lead to the conclusion that it is not possible, in the existing state of medical science, for any one person, or for a single association, or even for the medical profession of one or of several nations, to produce a complete general nosography. The unsuccessful efforts already made in this direction for the past century and a half are good evidences of the correctness of this proposition. Many individuals may each prepare the nosography of one apparatus of the human body, and thus doubtless give substantial aid in the cause of nosography and contribute thereto much valuable material; but, in view of the progressive character of medical science, the details of all such work must necessarily be provisional, and constantly subjected to alterations and revisions. The final decision of questions relating to the general principles of nosography, and tending to make the nomenclature of medicine uniform in all countries, should be made by an assembly of representant physicians of all nations, through international conferences, so that every individual member of the medical profession may know that his voice shall be heard for or against the adoption of any proposed method of nomenclature and classification of the diseases of man. By this means only can a comprehensive system of nosography be compiled which will be of practical utility to all nations for the purposes of vital statistics and of the medical reports of armies, navies, and general hospitals, or for the use of students, teachers, and investigators.

The answer to the fourth question is, that the excellent method of classification, borrowed from the botanists, by the early medical classifiers, should be reädopted with the modifications indicated below.

If the majority of the medical profession of the world should decide in favor of classifying the diseases of the human body, as heretofore, like systems of botany, it would

seem rational to base the classification upon anatomy in its broadest sense; and such a basis is the one which offers the greatest advantages, and the widest scope in theory and in practice. A knowledge of the gross appearances and of the construction and relations of the several parts of the body, of the minute structure of the tissues and organs, of the development and abnormities of the organs, of the functions of the apparatuses, and of the nature of morbid conditions, is of the utmost importance. Nay, more, a mastery of these various branches of anatomy is essential to the study of the natural history of diseases. By its aid, all deviations from the normal state of the body, or any part thereof, are at once recognised. It remains only to differentiate these abnormal conditions, and to define, name, and classify them. These, it seems, are sufficient grounds for the adoption of the anatomical basis for the nosography of man. It is therefore suggested that all diseases, injuries, and congenital abnormities be grouped into families, one family for each apparatus of the body, and one or more than one family for general diseases. Some of the families should have two or more than two branches, and families and their branches should be divided into classes, orders, genera, species, sub-species, varieties, and sub-varieties.

It is of the utmost importance that in the medical profession there be a consense of views concerning not only nomenclature and methodical arrangement, but also the use of the terms of classification. Notwithstanding the fact that the early nosographers indicated, as best suited to the purposes of nosography, the simple arrangement of diseases into classes, orders, genera, species, and varieties, the most recent of the modern medical classifiers begins with classes, and after orders introduces "sub-orders, tribes, and families," next to which he places genera, species, and varieties. Such a method only leads to confusion, complication, and uncertainty. Similar methods have been tried in medicine, and found wanting in clearness and accuracy.

The plan proposed in this work does not include sub-

orders, or tribes. Families are applied to the groups of diseases dwelling in the apparatuses of the body.

The nosographer who lays before the profession a system of classification is in duty bound to give an exact definition of each and every term of classification which he employs, in order that he may be rightly understood.

Only those terms of classification that are approved by the medical profession should be used in a special or in a general nosography.

The sooner the question of method is put to a vote, after free discussion in an association representing the medical profession of the whole world, the better it will be for the cause of accurate nomenclature and classification.

Therefore the following questions are suggested for discussion at the tenth International Medical Congress:

1. Shall there be instituted an International System of nomenclature and classification of the diseases of man?
2. If so, what shall be the basis of this nomenclature and classification?
3. What shall be the character of the nomenclature?
4. What shall be the method of the classification?
5. What shall be the nature of the terms used in the classification?
6. Shall these terms be defined?

In case the first question—Shall there be instituted an International System of nomenclature and classification of the diseases of man?—be decided in the affirmative, it is further suggested,—

1. That the International Medical Congress establish a permanent section on the nomenclature and classification of the diseases of man, to be composed of physicians and surgeons representing the medical profession of all nations.
2. That all national medical associations likewise establish each a section on the nomenclature and classification of diseases, composed of physicians and surgeons representing different regions of country, in order that their knowledge of

the peculiarities presented by disease in differing climates may be made available in the work to be accomplished.

3. That state, city, and special medical associations, through their presiding officers, each appoint a committee on the nomenclature and classification of diseases.—This can be effected without in any way deranging the machinery of these associations.

4. That the city and special associations report to the state associations such action as they may take upon the proceedings of their committees.

5. That the reports of the city and special associations be embodied in the report of the state committee, and the consolidated reports be presented to the state association for action and transmission to the national association.

6. That the national association refer the state report to the national section on nomenclature, etc., for a report after careful examination and free discussion,—the report to be acted upon by the national association, and forwarded, or presented by a delegate, to the section on nomenclature and classification of the International Medical Congress.

7. That the section on nomenclature and classification of the International Medical Congress then revise the several national reports, consolidate them, and present their conclusions to the congress, whose decision thereon should be final.

These suggestions are made in the belief that they point to a fair method of obtaining the views and the vote of the whole medical profession on a subject of the vastest importance to mankind, and also to the most expeditious way to attain the desired end of compiling a uniform nomenclature and classification of diseases that may be of practical utility to all nations.

DEFINITIONS OF THE TERMS OF CLASSIFICATION.

The following definitions of the terms of classification are modelled upon botanical nomenclature, except those of family, class, and order, which do not here occupy the same relative positions as in works on botany and zoölogy:

1. *Families of diseases.*[1]—A family is a group of diseases dwelling in an apparatus of the human body, and affecting in a greater or less degree the organs of this apparatus and consequently its function. Therefore affections of the organs of an apparatus, and also general diseases affecting several apparatuses at once, should be grouped into families.

2. *Branches of families.*—A branch of a family of diseases is a division of the family predicated upon affections peculiar to sex, as in the case of the family of affections of the urogenital apparatus, which should be divided into two branches, (1) andrology, (2) gynaecology; or upon the affections of an apparatus which includes two, or more than two, subsidiary apparatuses, as in the cases of the cephalo-rhachidian, nutritive, and cutaneous apparatuses.

3. *Classes.*[2]—A class of diseases is ordinarily defined as a division of diseases grouped together on account of their common characteristics. In this case, however, the term class is used to signify a group of diseases, which, though possessing different characteristics, affect a particular organ. In this system, therefore, the classes have reference to, and bear the anatomical denomination of, the organs of an apparatus.

4. *Orders.*[3]—An order is an association of genera or a group of the general morbid conditions of allied affections of particular organs. The orders, therefore, refer to the general denomination of the morbid condition of the organs of an apparatus.

5. *Genera.*[4]—A genus is an assemblage of species possess-

[1] Family, from *familia*, a family, and *famulus*, a servant, and *δμιλία*, an assembly, and the Hebrew word which means to labor,—is the most general term, being those who are bound together upon the principle of dependence. "Family includes in it every circumstance of connection and relationship." (Crabb.)

[2] Class, from *classis*, very probably from the Greek *κλάστς*, a fraction, division, or class. Class is more general than order. "Classification is a branch of philosophy which is not attainable by art only; it requires a mind peculiarly methodical by nature, that is capable of distinguishing things by their generic and specific differences,—not separating things that are alike, nor blending things that are different." (Crabb.)

[3] Order, from *ordo*, from *ὄρχος*, a row, which is a species of order, is applied to everything which is disposed. The order lies in consulting the time, the place, and the object, so as to make them accord. (Crabb.)

[4] Genus, from *gignere*, from *γένειν*, to engender, "is a class of objects divided into several subordinate species." (Webster.)

ing certain characters in common. The genera, therefore, refer to the particular denomination of the morbid condition of the organs of an apparatus.

A single species having distinctive characters that seem of more than specific value may constitute a genus.

6. *Species.*[1]—A species is a permanent series of similar individual affections associated on account of their common properties. These properties are to be determined only by the closest observation of abnormal conditions of the human body. Species, says Cullen, "are ready-made by nature [he would have been more exact had he said, the individual diseases which constitute species are ready-made by nature]; the nosographer has only to discover and name them, but the orders and genera he must construct, not according to fancy, ut to reason and to definite rules." Species are therefore named in accordance with the general specific properties of the affections of the organs of an apparatus.

7. *Sub-species.*—A sub-species is a subordinate species, possessing distinctive characters that are of more specific value than those of a variety. On this account it occupies a middle position between the species and the variety.

8. *Varieties.*[2]—A variety is a form of species possessing peculiarities that differentiate it from the typical characteristics of the species. The varieties are therefore named in accordance wlth the particular specific properties of the affections of the organs of an apparatus.

9. *Sub-varieties.*—A sub-variety is a subordinate variety or a division of a variety. It may indicate morbid properties differing in their characteristics from those typical of varieties, or may indicate the special cause of the affection. The sub-varieties, therefore, relate partly to the special character

[1] Species, from *spicere*, to behold, signifies literally the form or appearance, and, in an extended sense, that which comes under a particular form. "Species is a term used by philosophers, classing things according to their external or internal properties." (Crabb.)

[2] Variety, from *varius*, which probably comes from *varus*, a speck or speckle, because this is the best emblem of variety. Variety seems to lie in the things themselves. A variety cannot exist without an assemblage. "Variety strikes on the mind, and pleases the imagination with many agreeable images; it is opposed to dull *uniformity*." (Crabb.)

and partly to the aetiology of the affections of the organs of an apparatus.

10. *Symptoms.*[1]—A symptom is a manifestation of disease. It is perceptible to the senses, even of the patient.

11. *Signs.*—The sign of a disease is the indication of its presence. It may be (1) a sign *per se*, indicating disease apart from symptoms, or (2) an inferential sign deduced from the analysis of a symptom or of a group of symptoms.

The symptoms and signs, without which accurate classification would be impossible, serve to detect individual diseases and establish species, and from the species the classification is constructed, for out of them spring the genera and the orders, the varieties and the sub-varieties. Therefore the position of symptoms and signs is next in order to the foundation stone of nosography.

Symptoms of diseases, being their manifestations, or those phenomena which are apparent to the senses of the observer or even of the patient, differ very materially from the signs, these being deduced from the analysis of the symptoms. Therefore the symptoms are noticeable by anybody, but unless rightly interpreted are generally of little value. It is only the wise and experienced physician, after analysing a group of symptoms and properly interpreting them, who can perceive what is correctly termed the sign of a disease.

CONCLUSIONS.

Among the conclusions drawn from the preceding considerations are,—

1. That the systematic arrangement of diseases has given medicine an assured position among the sciences, and has contributed marvellously to the advancement of medical art during this century.

2. That the only stable basis for nosography is anatomy.

3. That an accurate description and an exact definition of diseases are essential to a precise and practical nosography.

[1] Symptom, from συν, with, and πιπτειν, to fall. To fall in with. Any perceptible change in the human body.

4. That a nomenclature, to be satisfactory, must not admit the application of the names of men to diseases, or any name which does not convey an intelligible idea of a morbid condition.

5. That the nomenclature of diseases can be much improved only after a very great change for the better shall be made in the nomenclature of the fundamental science and associated arts of medicine.

6. That the most useful and practical classification of diseases is that in which these are grouped, in accordance with the apparatuses of the body, into families, branches of families, classes, orders, genera, species, sub-species, varieties, and sub-varieties.

7. That the purpose of the nosographer should be to guide the practising physician to the end of any case of disease.

8. That a complete nosography should include the history, pathoanatomy, diagnosis, prognosis, and treatment of diseases; and, for ready reference, should contain not less than five synoptical tables: (1) A synopsis of the morbid states and morbific processes of the body; (2) a synopsis of the genera and species of diseases; (3) a synopsis of the classes, orders, genera, species, sub-species, varieties, and sub-varieties of diseases; (4) a synopsis of the aetious factors of diseases; and (5) a synopsis of the symptoms and signs of diseases, also a full alphabetical index.

9. That any system of general nosography, to be of utility to scientific investigators, practising physicians, and vital statisticians, should be the result of the conjoint labors of the medical profession of all the civilised nations of the world.

RECENT AND NEGLECTED CASES OF DISLOCATION OF RADIUS AND ULNA UPWARD AND BACKWARD UPON THE HUMERUS.

By U. C. Lynde, M. D., of Erie County.

September 28, 1887.

This dislocation derives its importance from several circumstances. It is the common dislocation of the elbow joint, much more common than all the others combined. When recognised, it is easily reduced; but from these two circumstances, viz., that the amount of deformity is less in this dislocation than it is in other dislocations of these two bones at this joint, and that the amount of swelling is very great, this dislocation is much more liable to be overlooked than the others. It is the only neglected dislocation of these two bones at this joint that has ever come to my knowledge, either by report or experience. When reduced soon after its occurrence, it ordinarily does little or no damage to the joint. It mostly occurs in childhood and youth. Hamilton states that in thirty-three cases observed by him, nineteen occurred in children under fourteen years of age. In the statistical table given by Holmes, more than half occurred before the age of fifteen. Agnew states that of the one hundred and thirteen cases admitted to the Pennsylvania hospital, seventy-five occurred before the age of twenty-five. It follows, that when, for any reason, this dislocation remains unreduced, it is generally for a lifetime. In a majority of cases this dislocation occurs in the handier, and therefore in the more useful, arm. When unreduced, the deformity is not only considerable, but the loss of function is impaired, and may be entirely lost. Of the main joints of the two extremities, this

dislocation becomes the soonest irreducible. Gross states that he "has never been foiled in a recent case, but that he has met with many examples where every attempt proved unavailing after the third week, and sometimes, even, by the end of the second." He states, also, that "It has been his lot to witness an unusually large number of these neglected cases, and generally at a time when nothing could be done for their relief." "It is worthy of notice," says this author, "that if efforts at reduction in neglected cases are long continued, they may be followed by grave results, such as violent inflammation, suppuration, or even gangrene." He then quotes the case of Velpeau, in which that great surgeon had the courage to report the death of his patient. Hamilton states, after having reported successful efforts in the reduction of neglected cases by various surgeons, that "While so many cases can be found in which surgeons have been successful, the successful cases are not, probably, in the ratio of one to ten as compared to the failures." He declares that "The severe accidents attending these efforts at reduction have not all been recorded, such as suppuration, gangrene, and death;" and goes on to quote Denace as having looked up five or six successful reductions that were followed by grave results. Agnew says,—"The triumphs in the reduction of this dislocation, when compared with the failures, are highly exceptional; and in the few cases in which the surgeons have been successful, that success has not unfrequently been won at the cost of a ruptured brachial artery, an important nerve, or the gangrene and loss of an arm,"—quoting, as is usual with authors, the courage of Velpeau. It would seem that the foregoing would be sufficient to awaken in authors and teachers a lively interest in this subject; but more especially interesting and important should be the interest taken in it by the general practitioner, who is the most directly concerned, as being responsible for all the evils that follow errors in diagnosis. Gross states that he is "satisfied, from no little observation, that there are no luxations which are so little understood or so unscientifically managed."

The foregoing concern the patient. But how now can the surgeon escape trouble? It certainly will come home to him sooner or later. He must know that he has made a grave mistake, and that this mistake will be known and felt by his patient. He must know that for all the grave consequences of his mistake he alone is responsible. He must know that his professional friends will know it, and, worse still, he must know that his professional and non-professional enemies must know it; and, still worse than all the preceding, he must fear, almost expect, that those public excrescences, the lawyers, will find it out. But strange as it may seem, when we consider that these mistakes are not very uncommon, the cases of malpractice growing out of them are rare. Doctors are driven to defend themselves in court for unavoidable results,—unavoidable, sometimes, on account of the nature of the injury, and sometimes on account of an intractable patient; but that so few of these cases get into court is, to me, a wonder.

We will first consider the reduction of this dislocation when recent. And let us examine, first, the factors concerned in its reduction, situate in and about the joint. These factors are three in number,—muscles, ligaments, and bones. The first, the muscles, are active, while the last two are passive, factors. Concerning the muscles, there is among writers upon this dislocation a pretty general agreement. All agree that anteriorly the biceps and brachialis anticus are in a state of tension, unless the latter be ruptured—a circumstance that is not mentioned by writers generally, and only claimed as possible by a few. The triceps, posteriorly, is also in a state of tension. A few writers have mentioned the pronator radii teres and supinator brevis as also being in a similar state; but these muscles are not generally taken into account when available agents in the reduction of this dislocation are being considered. In all cases in which the brachialis anticus remains intact, it is the chief factor about the joint on which the surgeon relies in the reduction. Writers on surgery generally agree, concerning the state of the bones in this dislo-

cation, that the radius and ulna are united by the orbicular ligament, and that the head of the radius lies against the posterior surface of the external condyle, while the coronoid process lies in the olecranon fossa. Malgaigne, alone, claims that this process more often lies against the trochlea of the humerus, while several admit that it may not have reached the olecranon fossa, or may even have gone beyond; and these conditions, as possibilities, no surgeon can dispute. Some writers, Erichsen in particular, claim that the coronoid process is liable to be broken, while others fail to mention it. In the three experiments made upon the cadaver by Dr. Moore, this process remained intact in all. It is probable that this process very seldom breaks, if ever.

We come now to consider the ligaments. Gross and Bransby Cooper merely state that the ligaments are torn or ruptured, without stating what ligaments. Holmes, Hamilton, and Andrews in Ashhurst, say that the anterior and lateral ligaments are more or less torn. Bryant and Erichsen say nothing about rupture of the ligaments. Agnew says that the anterior and lateral ligaments are torn. Wyeth says that the anterior, the internal lateral, and the anterior fasciculus of the external lateral ligaments are torn asunder. In Dr. Moore's three experiments upon the cadaver, the anterior ligaments were torn; but the lateral ligaments escaped in all. With regard to these conflicting statements concerning the lateral ligaments, I suppose that these authors have made their statements more upon faith than knowledge; seldom, if ever, instituting an inquiry addressed to experimental demonstrations. In taking into consideration the worth of Dr. Moore's experiments upon the cadaver, we must bear in mind that only the bones and ligaments are considered—parts that must be subject to the same laws in death as in life. Muscles might be torn in life that might escape in death, being under the laws of volition or reflex action; but this cannot be claimed of the lateral ligaments, or of any other ligaments. As these dislocations take place when the forearm is extended, it would seem that the lateral ligaments

would be sufficiently relaxed to allow the coronoid process to slip over the trochlea of the humerus into the olecranon fossa without their rupture. Sixty-five years ago Sir Astley Cooper described his method of reducing recent dislocations of the radius and ulna backward and upward upon the humerus, as follows: "The patient is made to sit upon a chair, and the surgeon, placing his knee on the inner side of the elbow joint in the bend of the arm, takes hold of the patient's wrist and bends the arm. At the same time he presses on the radius and ulna with his knee so as to separate them from the os humeri, and thus the coronoid process is thrown from the posterior fossa of the humerus, and whilst this pressure is supported by the knee, the arm is to be forcibly but slowly bent, and the reduction is soon effected." By this it will be seen that Sir Astley ascribes the throwing of the coronoid process from the posterior fossa of the humerus to the pressure upon the radius and ulna. This process is not thrown out or lifted out of the olecranon fossa by pressing upon the radius and ulna. Flexing the forearm upon the arm rolls the olecranon process out of this fossa, and the same procedure rolls the coronoid process out of this fossa, after it has been driven there by accident. This false reasoning has been followed by nearly every author who has attempted to explain the modus operandi of Sir Astley's manipulation in the reduction of this dislocation from his time to the present. Using the knee, or any other body, in the bend of the elbow is a matter of convenience and not of necessity; for it is not by pressing upon the radius and ulna that the coronoid is removed from the olecranon fossa, but by flexing the forearm upon the arm. The knee at the front of the elbow, as a fulcrum, has been placed by some authors against the end of the humerus; by some, against the bones of the forearm; while by some no directions are given. When the knee rests against the end of the humerus, the bones of the arm and forearm are only crowded more firmly together with every increment of force used. If it be placed against the bones of the forearm, then, as these are held to the humerus by the

muscles, that bone is brought down against the bones it is sought to separate it from. And if it be placed so as to press against all three of the bones, as in practice it generally is, then, as in other positions, it fulfils its purpose, that of a counter point, while the forearm is being flexed upon the arm. They all succeed, for flexing the forearm is all that is needed. There are but two indications in the reduction of this dislocation. The first is to remove the coronoid process from the olecranon fossa; the second, to aid the brachialis anticus in drawing this process in front of the humerus. As there are but two indications, there are but two methods of reducing this dislocation. Stated briefly, they are,—first, over-extension and traction; second, flexion and traction. By the first method, the coronoid is *lifted* from the posterior fossa; by the second, it is *rolled* from it. In both methods, traction from the wrist is used to aid the brachialis anticus in drawing the ulna into its normal position. Should this muscle in any case be torn, as described by some, then traction will be aided by the biceps. The general practitioner easily reduces this dislocation when it first occurs; the layman reduces it; the patient himself reduces it. But, after a few days in some instances, after a few weeks in most, and after a few months in all, its reduction becomes a difficult task. Surgeons raise the question, Why does a dislocation so easily reduced when it first occurs, so soon become difficult of reduction, if not absolutely irreducible? Gross, after stating that this difficulty of reduction cannot be owing to so recently formed adhesions, says he is unable to account for it. Bryant attributes it simply to adhesions. Erichsen says it is owing to adhesions and interlocking of the bones. If we take the bones, the humerus and the ulna, and place them in the position they occupy in this dislocation, and hold them so by lateral force, we shall see what a trifling amount of this force it will require; and at the same time we shall see how impossible it would be to reduce this dislocation by any amount of traction while the angle of the bones remained unchanged. The *sine qua non* then is, to remove the coronoid process from the olecranon

fossa. This can be done by either flexion or over-extension. The *former* is *safe;* the *latter may* endanger important vessels. But to return to the first part of our question. Why is this dislocation so easily reduced when it first occurs? Ligaments, muscles, and bones are the factors concerned. The first, the ligaments, having just given way sufficiently for the dislocation to take place, should offer no barrier to its reduction. The second, the muscles, are in the most favorable state to be made available in its reduction. As regards the last factor, the bones, an examination of them when the dislocation has just taken place will shed some light on this subject. A few weeks since, while removing pieces of bone from an elbow that had been caught between the buffers of two cars, I found this process detached from the ulna. The man was young and stout, and this process and its coverings were, perhaps, well developed. But I was disappointed in the point of this process. It was not a point in the sense in which I had been accustomed to regard it, but rather an elastic mass covering the apex of the bone, and consisting of cartilage, fibrous tissue, and synovial membrane, yielding and smooth. When a dislocation takes place, and this process, with its coverings bathed in synovia, is thrown into the olecranon fossa, which is itself lined with cartilage, covered with synovial membrane, and supplied with synovia, we have two surfaces in contact, admirably adapted for sliding easily and readily over each other. And thus we find in a fresh dislocation two factors, ligaments and bones, in an unfavorable condition for offering resistance to the reduction; while the only remaining factor, the muscles, are in a favorable state for rendering efficient aid.

We will now answer the second part of our question,—Why does this dislocation so soon become difficult of reduction, if not absolutely irreducible? Examining the bones, we find the coronoid process held down in the olecranon fossa, with its uneven anterior surface against the even, smooth, posterior surface of the trochlea. The relation of the two bones, ulna and humerus, in this dislocation, when not dis-

turbed, is that of two hooks hooked together. But when flexion of the forearm is begun, one hook, that of the fossa, is unfastened, and ceases to be a factor; but the main and more perfect hook still encloses in its concavity just all it can hold, the trochlea of the humerus; and as this trochlea is a perfect cylinder, and as in flexion the hook, the coronoid process, will be held firmly on this cylinder, the trochlea, at all stages of the flexion, however extreme, this part of the obstruction to reduction becomes apparent. Right here let us examine the form of this hook, the coronoid process, and also the form of the cylinder, the trochlea of the humerus. Not only is the coronoid process a hook, antero-posteriorly, but it is the segment of a sphere, almost a hemisphere, laterally; and not only is the trochlea a perfect cylinder, but owing to the conformation of the bone on either side, its concavity constitutes the segment of a circle laterally, which is almost a semi-circle. Now when these parts are *in situ*, especially when the forearm is at a right angle to the arm, the convexity of the coronoid completely fills the concavity of the trochlea. This is a condition of much more importance in old than in recent dislocations. There is one more circumstance of more importance still, and that is, that such is the relative formation of these parts, the trochlea and the coronoid process, that this process is no ordinary hook seizing its object by a small extent of surface laterally, but it is a hook that completely clasps its object over a surface of nearly a hundred degrees. Especially is this true of these parts when the forearm is at a right angle. But this peculiarity ceases when the forearm is in an extreme state of flexion. This state is consequently much more favorable for reduction than when the forearm is at a right angle, and more favorable than any other. Having shown the great extent of bony surface in contact, and the *peculiar* manner and the wonderfully *firm* manner in which these bones are hooked on to each other, it remains to notice the condition of these surfaces in a few days or weeks after a dislocation has taken place.

When the dislocation first takes place, the surfaces are al

covered with soft parts that readily and easily glide over each other. Surgeons agree that in this dislocation certain muscles are in a firm state of tension; that the biceps and brachialis anticus, aided somewhat by the pronator radii teres and supinator brevis, counteract the triceps, the two opposing sets holding the radius and ulna firmly and actively against the humerus. On account of the pain caused by all motion the patient will keep the arm still, so this pressure will be constant and without change of position. Under these circumstances, taken in connection with the fact that one of these surfaces, the anterior surface of the coronoid, is like ivory and uneven, but a very short time will be required for absorption of the intervening soft parts, leaving the bony surfaces together. At the same time adhesions are taking place of ligaments in and out of place, and binding these bony surfaces together. While surgeons have entertained different views concerning the causes that prevent reduction of this dislocation, nearly all efforts at reduction have consisted in force. They have used their own strength, that of assistants, and the pulleys, all acting upon the idea that somewhere there was an obstacle, which, somehow, might be overcome by force. Dr. Andrews has succeeded in one case by cutting the lateral ligaments subcutaneously, and he advises cutting the tendon of the triceps if necessary. When we consider the condition of the factors that are concerned in rendering a neglected case of this dislocation irreducible, the wonder is that surgeons have ever been successful in safely reducing it by mere force. But few writers on surgery mention the use of the knife in cutting ligaments and tendons subcutaneously, and those who do generally condemn it, claiming that it is dangerous, that it is not successful, etc.

This joint recovers all its functions after compound dislocations, injuries in which ligaments, muscles, fasciae, and skin are extensively lacerated. John Divine, an employé of the Erie Railroad, had a compound fracture of the right elbow with rupture of the brachial artery. Assisted by my student, Dr. Clark, I tied the artery and dressed the fracture.

He recovered, and is now in the service of the road, with a good and useful arm.

Bullets may traverse this joint, comminuting the bones and contusing the soft parts; car buffers may crush it and the surgeon exsect it; and yet the arm lives on, sometimes with an artificial joint, and sometimes with an ankylosed joint, if joint it can be called. Retrospection of the cases of gunshot, railroad, and other severe injuries to this joint that have come under my observation, with the operations made for their relief, and the results, has convinced me that no injury is too severe for this joint to recover from if the main vessels remain intact. Cases of neglected dislocation, that can be reduced by a moderate degree of force in the way of extending (not over-extending) and flexing the arm to an acute angle, and then using traction, can be considered very fortunate cases. But those that cannot be reduced in this manner should not be given up as hopelessly deformed and maimed for life. It is the duty of the surgeon to cut, with antiseptic precautions, the posterior ligament, the tendon of the triceps, and the lateral ligaments, subcutaneously. By these means the obstacles to extreme flexion have been overcome to such an extent that few old dislocations can resist the amount of traction from the wrist and forearm to which the parts can safely be subjected. Extreme flexion, unlike extreme extension, can be made available without jeopardising the main vessels in front of the elbow. Should the surgeon now fail, he is justified, in favorable cases, in opening the joint posteriorly and laterally, and, avoiding the ulnar nerve, in cutting every fibre that opposes reduction, save in front of the joint. The vital parts of the arm all lie in a small space in front of the elbow, and as long as the surgeon's knife does not reach this locality, so long he does not jeopardise the life of the forearm. Care should be taken not to cut away the coverings of the ends of the bones, and the greatest care should be observed in antisepsis.

The reduction should now be effected by flexing the forearm to an acute angle and traction. Some force could be

safely spent upon the olecranon, if necessary. By only using the knife posteriorly and laterally, and by only using traction when the forearm is flexed, the surgeon will not endanger the main vessels, and consequently will take no chances of killing the forearm. After the reduction has been effected, should there be in any case a disposition on the part of the joint to fail to maintain itself in its new but normal position, in consequence of the use of the knife, an artificial support can be made use of for a short time by the surgeon.

The after treatment of the wound should be modern, and with a view of restoring the motions of the joint if possible. The surgeon, in this particular, may or may not be successful, but he *should* be successful in restoring the bones to their normal position and thus relieving the deformity, and at the same time placing the forearm in the best position possible for usefulness in case of ankylosis. I have stated that the surgeon should make this last resort in favorable cases. A favorable case would be one in which milder means had failed; in which the patient was healthy; and, while the loss of motion was sufficient to deprive him of all benefit of flexion and extension in the use of the arm, there evidently was not complete and extensive bony ankylosis. The latter circumstance would be determined while the patient was under an anaesthetic, and while other means were being tried for the reduction. No case should be regarded as favorable in which the surgeon sought the patient, but in this respect this operation would constitute no exception to surgical operations in general.

DISCUSSION.

DR. E. M. MOORE, of Monroe county, said that like all surgeons who have been long in practice he had seen many cases of dislocation of the elbow. Dr. Hamilton mentions a case particularly in his book where he undertook to reduce a luxation of six or possibly nine weeks' standing. Dr. Moore happened to be his assistant, and after trying all justifiable force suggested cutting the triceps, which Dr. Hamilton did not like to do. Since that time Dr. Moore had not divided the triceps, although he thought it a proper thing to do. He had in mind two cases of seven

weeks' standing, in which the usual plan of counter-extension with pulleys, and exerting great force so as to rupture the adhesions as far as possible, failed utterly. In the first case, after working nearly an hour, he threw the apparatus off, and using the patella as a fulcrum directly against the olecranon and making over-extension of the arm, produced an admirable position for reduction, inasmuch as the coronoid process is released and ceases to be a hook, and the olecranon lies upon an inclined plane. He found that it slipped down into its place, and holding it so he pushed the forearm around and it went up into an acute angle. In the second case he also succeeded in the same way. He had a firm conviction that this process of over-extension would reduce the very cases that had heretofore been abandoned under any other method that has been proposed. He doubted if there were much danger of injury to the blood-vessels or nerves. He had seen none.

Dr. John Cronyn asked whether it was not most likely to be successful when the coronoid process was broken.

Dr. Moore replied that he thought it a very rare thing for the coronoid to be broken. In the first place, the insertion of the brachialis anticus is not at the extremity of the coronoid; it is fully half an inch below the extremity, so that unless the accident itself should break the coronoid the action of the muscle would have no influence upon it. In western New York there was in a village a protracted series of law-suits with reference to the unreduced dislocation of an elbow joint. It was tried four times. The surgeon who had charge of the case was a capable man, and he applied the method described by Dr. Lynde in the reduction of the dislocation. He said he distinctly felt it go in with a snap. Unfortunately he placed the patient's arm upon a pillow, because he thought there was an unusual amount of swelling, and there it lay day after day. He would come and see it, and it was so tender he would hardly touch it, and at the end of a considerable period of time it did not look right. One day this lady came to Dr. Moore's office and wanted him to look at her elbow. He found it dislocated, and she told him how it had happened two months before. She declined to allow him to attempt reduction, her purpose in coming being to make him a witness in the case. His testimony was that it had been reduced; that being placed upon a pillow, the arm had gone out to an angle of 135°, and then from some little motion of the body it had slipped out, and in the swelling was unobserved, and so remained out. After looking over the books thoroughly, nothing was found with reference to consecutive luxation of the elbow joint. Dr. Hamilton, in conversation, confessed that he knew nothing about it, and was disposed to deny it. A teacher of surgery whom he knew insisted that it was a mistake. In reading Dr. Hamilton's book he became convinced that the author had had a case but did not recognise it. Some time after that Dr. Moore had a case of luxation in a young person. The

patient was under ether, and then it crossed his mind that here was an opportunity to know whether elbows would go out. After reduction he allowed the arm to go back to an angle of 135°, and out it went again. In making experiments upon the cadaver, he found that the anterior ligament was broken and the lateral ligament was not, and by taking hold of the arm as he did in the living subject he found it would drop out when the elbow reached the angle of 135°: hence the necessity of keeping the elbow at a right angle after reduction of the dislocation: merely putting it in a sling is sufficient. In another case the experiment failed, but it was not necessary that it should always go out. He found one other case of chronic liability to luxation: the man could throw the elbow in or out of joint at will by changing its position.

Dr. Cronyn, having had some experience on the subject, wished to say a few words. He had always been of the opinion that the readiness with which this consecutive luxation would occur would depend on the fracture of the coronoid process. Considering the antagonistic action of the muscles, one could hardly conceive how this consecutive dislocation could take place if the coronoid process were not broken. His own experience was, that the coronoid process was broken much more frequently than was supposed, and that this gives rise to the necessity of placing the elbow at right angles in order to avoid consecutive luxation. If it were not broken, one could scarcely see how it was possible for a consecutive luxation to take place, as the brachialis anticus acted as an anterior ligament to hold it in place. The insertion of the muscle is a good way down, but is so intimately associated with the ligament that it may be considered a part of it.

Dr. Lynde thought that Dr. Moore was right; that the coronoid process was not broken once in a thousand times. He presented a specimen upon which he demonstrated the mode of luxation and reduction. It would be seen by the specimen that the coronoid process exactly fills the olecranon fossa.

Dr. Moore said that in one case, in following out the method indicated by Dr. Lynde, he had the misfortune to break off the process. Extreme flexion he considered one of the most dangerous manipulations. His convictions were that over-extension was the proper method of reduction.

Dr. Carmalt, of New Haven, Conn., said there was one point with regard to this matter which had not been brought out. We all were familiar with Bigelow's monograph on the hip joint, in which the principle was established that the hindrance to the reduction of the dislocation was in the untorn ligaments of the joint; that it was not so much the muscular apparatus about the joint, but the untorn portions of the ligament, which got in the way of the reduction; and in the methods of reduction of the hip and shoulder by manipulation, we all know that the

principle was to make loose the untorn portions of the ligament, and endeavor if possible to put the limb in the position in which the dislocation occurred, and then the reduction followed easily. Now, Dr. Moore's experiments having shown that it was the anterior ligament which was torn, there was no difficulty in the reduction in that direction; the difficulty lay in the posterior ligament binding the olecranon to the humerus. Just as soon as we attempted to bring the arm forward and flex it, we were putting not only the triceps but the ligament in the way. If we kept that ligament loose, reduction was practically easy. In attempting to flex the arm, we put that ligament, which was the main hindrance to the reduction, upon the stretch, and were really increasing the obstacles we should endeavor to remove. There was the same objection to putting the heel in the axilla in reductions of the shoulder joint. Dr. Carmalt insisted that that was not the proper method. He thought the same principle should hold in reduction of the elbow. Therefore he considered reduction in the straight position better than by bending.

DISCUSSION ON TYPHOID FEVER.

REMARKS INTRODUCTORY TO A DISCUSSION ON TYPHOID FEVER.—STATEMENT OF QUESTIONS.

By Alfred Ludlow Carroll, M. D., of Richmond County.

September 28, 1887.

Question I. Does the term Typhoid Fever properly include all the varieties described by observers, or are there other, still undifferentiated, continued fevers commonly grouped under this head?

For the purposes of this discussion, the vague, unscientific name "typhoid" has been intentionally employed, forasmuch as the first question propounded implies a doubt whether the title, as ordinarily understood, applies to a specific zymosis with a definite pathology, or to a group of disorders with a more or less similar symptomatology.

The words "typhus" and "typhodes" are as old, respectively, as the days of Hippocrates and Galen, but although they were then made to include several varieties of "ardent" fever accompanied by stupor and insensibility, it is probable that they were meant to signify the graver types of remittent, which are clearly indicated in most of the illustrative cases cited. In fact, Hippocrates ("Epidemics") expressly mentions the alliance and gradations between intermittent and "continual" fevers, and if cases of the true enteric form occurred, they were apparently regarded by him and most of his followers for many generations as aggravated examples of malarial maladies, under the names of "lethargus," "phrenitis,"

"causus," etc. It was not until the beginning of the sixteenth century that "typhus" was again brought into use to designate the infectious adynamic continued fevers which for more than three hundred years afterward were confounded under this single appellation. Neither Prost, who in 1804 observed intestinal inflammation in the bodies of sundry Parisian fever patients, nor Louis, who twenty-five years later demonstrated the pathological lesion in the intestinal and mesenteric glands, appreciated at the time the differential value of their discoveries; and albeit in the intervening years we find occasional reference to "fièvre gastro-adynamique," "entero-mesenterique," "typhus abdominalis," and other indications of a clinical recognition of certain generic characteristics, it is within the lifetime of men yet young that the researches of Stewart in 1840, followed by Jenner in 1846, established a complete pathological and aetiological separation of typhus proper from the "typhoid" or typhus-like affection; and while we have been taught the marked differences between the two classes of disorders, we must remember that our immediate predecessors saw only the resemblances, and reflect that perchance our successors may clearly discern diacritic distinctions where we now perceive naught beyond likenesses.

Already, indeed, it may be asked if some of the described varieties of typhoid fever do not differ one from the other more widely than the general group differs from typhus; and common as is unfortunately the term in our death certificates, there are few among the most experienced of us who will deny their frequent difficulties in diagnosis, or dispute the statement that the exceptions to the typical portrayals of the text-books are nearly as numerous as the conformities to rule. The very authors who draw the most vivid picture of the malady thus baptized supplement their individualised miniature with a bewildering sort of "superposed photograph," giving, like the "combined portraits" of an entire class of "sweet girl graduates," a rather blurred compromise of a score or more of quite dissimilar features.

The conventional delineation of a "regular" case of typhoid fever is too familiar to need reproduction here. The prodromic lassitude and insidious, crawling elevation of temperature; the diarrhoea, tympanites, "gurgling in the right iliac fossa," splenic enlargement, and characteristic eruption; the bronchial catarrh and epistaxis; the peculiar thermometric chart; the ataxic nervous phenomena, low delirium, stupor, deafness, subsultus tendinum, parched mouth, sordes, and utter prostration,—all these constitute a tableau so striking, on paper, that the second-year student of medicine would feel affronted by a doubt of his readiness to recognise it at a glance. But as his reading and observation advance, he learns that, on the one hand, any, or almost all, of these pathognomic indices may be absent from a case which he is told to record as typhoid, while, on the other hand, many of them may be present in other diseases; that he is liable to be deceived by masquerading examples of miliary tuberculosis, pneumonia, ulcerative endocarditis, pyaemia, uraemia, cerebro-spinal fever, and similarly disguised ailments; and that even after he has acquired the skill to detect these latter, the contingent remainder of continued adynamic fever cases, without any apparent local habitation or name, affords an infinite scope for errors of diagnosis.

Wunderlich laid so much stress upon the temperature curve as to affirm that typhoid fever might be excluded if the body heat reached 104° before the fourth day, or if it did not exceed 103° between the fourth and sixth days, or if it decreased in the second half of the first week, or if it were below 104° at evening between the eighth and eleventh days.

Liebermeister,[1] however, whose authority it were heresy to doubt, describes examples of "abortive," though none the less genuine, typhoid, in which, without prodromata, the temperature rapidly rises to 104° on the second or third day, with return to the norm within a few days, and also cites "afebrile" instances with splenic enlargement and roseola, but confesses the impossibility of drawing a sharp line of de-

[1] "Ziemssen's Cycl.," vol. I.

marcation between febrile or afebrile cases with abdominal symptoms belonging to typhoid fever proper, and those "which depend simply upon catarrh of the stomach and bowels."

Dr. Francis Delafield has reported a number of carefully studied cases of typhoid with irregular fever-curves, their chief interest lying in the different hours at which the maxima and minima occurred, thus suggesting a possible explanation of some of the instances where an apparently low range of temperature is said to have been associated with severity of the other manifestations of the ailment. But, aside from such exceptional calorific anomalies, the conjoint experience of the profession has taught us not to place implicit reliance on the thermometer.

That abdominal symptoms may be absent in typhoid fever, and present in other conditions, is a lesson equally impressed by modern writers. Swelling of the spleen is so common an event in various febrile affections, especially in malarial attacks, that no particular significance can be attached to it; intestinal disturbances indistinguishable from those ascribed to true enteric fever, and even an eruption resembling the typhoid roseola,[1] may be due to other causes. Alleged examples of "typhoid" with constipation are of almost daily record. In one series of a hundred cases analysed by Liebermeister, twenty-nine were without enlargement of the spleen, fifty-nine without diarrhoea, seventy-nine without eruption. Of still less value is the bronchial implication, or any of the minor clinical phenomena.

If we then fall back, as many practitioners do, upon the adynamic character of the illness, we are told by Liebermeister that "the typhoid symptoms, to which the chief importance was attached in former times, possess only a relative significance;"[2] and by Da Costa,[3] that "no blunder is more common than to misconstrue into typhoid fever a typhoid condition of the system . . . which may be present

[1] "Liebermeister," loc. citat.
[2] Ibid.
[3] "Medical Diagnosis."

in very many dissimilar maladies, and which is present in its most perfect form in typhoid fever." And the same accomplished author, immediately after a rehearsal of the proper symptomatology of typhoid fever, cites a case wherein all the conditions save diarrhoea warranted the diagnosis, but which was discovered, post mortem, to be one of renal abscess.

Per contra, Dr. Amidon, at a meeting of the N. Y. Pathological Society, January 12, 1887,[1] exhibited the intestine, showing the lesions described as characteristic of enteric fever, from a case which had throughout its course simulated cerebro-spinal fever. The temperature was irregular, falling to normal on several occasions; no eruption till after the third week, when a scarlatinoid exanthem appeared in patches all over the body, most about the joints. Toward the end, repeated chills, with rise of temperature and aggravation of cerebro-spinal symptoms, intervened, and death took place on the fifty-second day from perforation and intestinal haemorrhage.

Similarly, before the Academy of Medicine in Ireland,[2] Dr. James Little presented specimens from a case of enteric fever, in which, though there was extensive ulceration of both small and large intestines, the symptoms observed during life had been mainly cerebral.

At a session of the Société Medicale des Hopitaux of Paris, in March last,[3] M. Danlos recounted a case wherein, after a brief manifestation of gastro-intestinal disturbance, on the fifth day the joints became swollen and painful, leading to a diagnosis of articular rheumatism. A few days later purpura, epistaxis, and haemoptysis occurred, the temperature remaining almost stationary, but subsequently rising to 102.2°. The attack ended mortally on the eighteenth day, and eschars and extensive ulcerations were found in the lower part of the intestine.

So great is avowedly the uncertainty of diagnosis that the appearance of an intercurrent nasal catarrh in a case other-

[1] "N. Y. Med. Jour.," Feb. 26, 1887.
[2] "Brit. Med. Jour.," Aug. 7, 1886.
[3] Ibid., March 26, 1887.

wise regarded as typhoid fever is set forth by Liebermeister as a sufficient reason for changing our opinion, though we are not distinctly informed what such misconstrued cases may really be. Nor is our incertitude always dispelled if the patient obligingly afford us an opportunity for a necropsy, for the anatomical lesions, formerly considered as of crucial import, have had the shadow of more than a doubt cast over them.

Wunderlich intimated that under the name of typhoid fever were included two diseases, essentially different, although similar in their symptomatology, and even in their patho-anatomy: the one, a general infection, localised in the intestinal glands; the other, a local enteritis wherein the follicular apparatus of the bowel is affected in like manner as in the former, and therefore induces a similar train of symptoms. In fatal instances of protracted malarial fevers it is well known that intestinal lesions are frequently discovered, and although these are oftenest of the nature of catarrhal ulcerations, and in the large intestine, they are sometimes in the ileum, and indistinguishable from those of enteric fever.

Forty-five years ago, Dunglison, treating of the severe forms of autumnal remittent fever, which, as he had noted, often assume a continued character, said,[1]—"Gastro-enteritis usually exists, and not unfrequently the follicular form, or what has been termed dothinenteritis. Under another head it will be stated that this form of enteritis prevails chiefly in typhoid fever, but still it is met with in the remittent form."

Passing over numerous intervening writers, Flint, in the last edition of his Practice, repeats the statement that "After death from remittent fever . . . the solitary glands and Peyer's patches may be swollen. The latter often present the shaven-beard appearance." I have seen not only infiltration, but ulceration and sloughing, of Peyer's patches in unmistakable remittent fever.

In an interesting discussion before the Royal Medical and Chirurgical Society,[2] on the continued fevers observed in

[1] "Dunglison's Practice," 1842, vol. 2, p. 503.
[2] "Brit. Med. Jour.," Feb. 13, 1886.

Egypt, at Suakin and elsewhere, Dr. J. Edward Squire recounted numerous anomalous cases, one of which, believed during life to be enteric fever, was found, post mortem, after four weeks' illness, to have no specific enteric lesions at all. Surgeon-Major Myers, from careful post mortem observations in the Egyptian cases, was inclined to think that although ulceration of Peyer's patches was found in some instances, the disease was not true enteric fever, but rather a dysenteric affection which had extended above the ileo-caecal valves. Surgeon-General Marston thought that the nature of the fevers in India, Egypt, and Tunis, as well as in England, was doubtful, though he regarded them as in the main true typhoid, with an admixture of a rarer form of fever which was remittent. Dr. Broadbent believed that in tropical and subtropical climates there was some other fever, which, though like typhoid in its intestinal ulceration, was not identical.

Surgeon-Major Macnamara[1] describes several classes of intestinal lesions in these Egyptian fevers: 1. The usually depicted tumefaction, ulceration, etc., of Peyer's patches. 2. "Bodies, in some cases as large as almonds, and resembling lymphatic glands, were studded under the mucous surface of the ileum, ileo-caecal valve, and upper part of the caecum. Most of these were broken down by ulceration and sloughing;" perforations were very frequent. Peyer's patches, as well as the colon and rectum, were normal. 3. In a few cases there was a combination of the foregoing lesions. 4. The usual lesions of the large intestine, commonly regarded as dysenteric, *i. e.*, thickening, softening, pigmentation, ulceration, etc., extending to, and most marked in, the rectum, were found combined with class 1 or 2. Ordinary cases of dysentery, without symptoms simulating typhoid fever, were not included. In the second class of cases, peritonitis, haemorrhage, and perforation were oftenest seen.

Surgeon-General Gordon,[2] referring to the continued fevers

[1] "Brit. Med. Jour.," March 13, 1886."
[2] Ibid., March 5, 1887.

so rife in India, draws a distinction between "typhoid" and "enteric," and defends his belief that the cases alluded to in several of his reports "were of climatic endemic fever, and not the specific disease, due to a specific cause, such as his instructions defined."

Dr. Vandyke Carter[1] discovered lesions like those of enteric fever in 5.4 per cent. of patients dying of "remittent fever," and states that "pink spots," identical with those of typhoid, were seen at Bombay in cases of relapsing and malarious fevers.

Mr. Cutfield, government medical officer of Mackay, Queensland,[2] writes that "A continued fever [malarial?] is endemic in the district, and occasionally becomes very prevalent and virulent. The course of the severe cases exactly resembles enteric fever, and has the same complications; but the usual form is much milder, and lasts only ten to fourteen days. The temperature resembles enteric fever, but there is no rash. . . . Autopsy always revealed ulceration, chiefly in caecum and ascending colon."

The "mountain fever," which has been observed in elevated regions from the Himalayas to the Andes and our Rocky Mountain range, is the subject of much diversity of opinion. Dr. W. A. Hammond[3] classes it with "the ordinary typhoid fever of the country," and asserts that in two fatal cases he found "the usual diseased condition of Peyer's glands;" while Dr. Smart[4] regards it as "a malarial remittent with adynamic tendencies," and ascribes its origin to large

[1] "Spirillum Fever;" London, 1882, p. 488. The same accomplished investigator has lately published an important monograph "On a Peyerian Ulcer-Lesion of the Small Intestine" (Bombay, 1886), wherein he describes the post mortem aspect of a series of cases of fever seemingly caused by non-specific filth-poisoning (to which he is now inclined to assign the instances noted in his former work), and defines some pathological distinctions between these "septic" ulcers and those of genuine enteric fever, their form being usually narrow, with longest transverse diameter, and the preliminary follicular infiltration being less marked. In view, however, of the known diversities of the specific enteric lesions, the difference appears to be rather one of degree and rapidity of course, and the cases recorded by Dr. Carter would without doubt be diagnosticated as "irregular" typhoid by most physicians.

[2] "Brit. Med. Jour.," May 8, 1886.

[3] "Hygiene," p. 258.

[4] "Am. Jour. Med. Sc.," Jan., 1878.

amounts of vegetable organic matter, which he detected even in the mountain streams. Dr. J. VanR. Hoff[1] ranks it with the infelicitously named "typho-malarial" of Woodward, as a hybrid disorder, of which the prominent features are typhoid; the modifying, intermittent. Most other writers, here and abroad, have viewed it as an unmixed malarial disease. In a recent summary of the various ideas entertained, Dr. Roland G. Curtin,[2] although inclining to the belief that many of the reported cases are either typhoid or "typho-malarial," avers that almost every disorder with a febrile reaction has been called "mountain fever," and disputes the existence of "a separate and distinct disease" peculiar to the Rocky Mountain region.

On lower topographical levels a like hesitancy of diagnosis is often shown, and "typho-malarial" is a convenient refuge of dubiousness, the former faith in an antidotal antagonism between the paludal and enteric ferments having been abandoned. In one of the latest essays on this subject, Dr. James Hutchinson[3] includes under the head "typho-malarial" two classes of cases,—remittent fever acquiring a typhoid form, and typhoid occurring in patients with preëxisting malarial poisoning. If, in the first of these categories "typhoid" be interpreted to mean "adynamic," the adjective is intelligible, though almost superfluous, for it is no new observation that "if simple remittent fever be protracted, certain symptoms denoting the typhoid state may appear. . . . These symptoms are not sufficient to show the union of typhoid fever and remittent fever; they are liable to occur in all fevers, and in various other affections."[4] The study of endemic fevers in malarial districts led me some years ago to the conclusion that, "aside from the adynamic type of remittent, which may depend upon unfavorable surroundings or feeble constitutional powers of resistance, it seems probable that the tendency to intestinal localisation may in some instances ren-

[1] "Am. Jour. Med. Sc.," Jan., 1880.
[2] "N. Y. Med. Jour.," Jan. 8, 1887.
[3] "Pepper's Syst. of Pract. Med.," vol. I, art. Typhoid Fever.
[4] "Flint's Prac.," ed. 1868, p. 873.

der a malarial patient peculiarly susceptible to the infection of true enteric fever; that in others, the glandular implication may simulate the symptoms of a somewhat irregular dothinenteritis, especially when exogenous septic agencies cooperate."[1]

Those who are familiar with the classical lectures of Watson will remember his graphic description in 1838 of the different varieties of continued fever, and his insistance that there is no line of genuine distinction between them which can be relied on, and that the subdivision into "mucous fever, ataxic, adynamic, gastro-enteric, and so forth," is only misleading.

After the lapse of half a century, Surgeon-General Moore, in his "Manual of the Diseases of India," published last year in London, reverts to the same belief, asserting that "enteric fever" is but one phase of a generic continued fever, not of specific origin, and exhibiting no pathognomonic characteristics either before or after death.

Niemeyer,[2] on the contrary, while admitting that many cases, treated for weeks as "gastric" or "mucous" fever, are mild cases of typhoid, protests that "it is certainly going too far to scratch gastric and mucous fevers entirely out of the list of diseases."

Murchison,[3] after defining the ephemeral fevers recognised by all writers, describes a non-diarrhoeal variety, marked by increasing weakness, lasting two or three weeks, which he calls "asthenic simple fever," adding that "pythogenic fever occasionally assumes characters very like those now described;" and in British bills of mortality the non-committal title "continued fever" is frequently encountered, though seldom seen in this country.

In the state of New York more than 1,100 deaths are annually reported as caused by "typhoid" or "enteric" fever (representing, at the usual rate of mortality, over 9,000

[1] "Second Rep. N. Y. State Board of Health," p. 98.
[2] "Text-Book of Pract. Med.," Am. ed., vol. II, p. 591.
[3] "Continued Fevers of Great Britain," Lond., 1862, p. 601.

cases), and nearly as many are ascribed to "malarial" diseases. In very few of these are post mortem examinations made, and there is room for more than a suspicion that a distinction between the two classes is not always accurately drawn.

To sum up the evidence thus far adduced, there seems to be justification for the belief, that apart from errors of diagnosis in cases where the asthenic febrile movement is the result of an overlooked tubercular, pyaemic, or other determinable primary process, several disorders are commonly confounded under a single designation:

a. A specific exanthematous fever with a localisation in the intestinal glandular apparatus (to distinguish which the title "enteric fever" may be used until we gain a clearer idea of its intimate pathology), transmissible by means of a materies morbi developed in the excreta of the sick,—one attack, as a rule, protecting against future infection.

b. A group of acute adynamic ailments (for which the generic term "typhoid" may be provisionally retained), comprising,—

1. A septic enteritis (pythogenic?) giving rise to constitutional disturbances like those of enteric fever.

2. Perhaps a catarrhal variety (the "gastric" or "mucous" of some writers).

3. An anomalous continued fever, peculiar to warm climates.[1]

4. A continued form of malarial fever with intestinal complications (probably in most instances "malaria plus filth-poisoning").[2] The allegation, heard sometimes from physicians who have "grown up with the place," that malarial remittents disappear and are succeeded by "typhoid fever" as city suburbs spread over erstwhile rural environs (or, in other words, as crowding of population and refuse-accumulation are superadded), may generally be referred to this cate-

[1] Dr. Guiteras ("Rep. Marine Hosp. Service," 1885) places under the general head of "thermic fevers" various obscure continued fevers occupying the border land between malarial and typhoid, not influenced by quinine.

[2] "Fifth Rep. N. Y. State Board of Health," p. 305.

gory, unless we are willing to accept Dr. W. B. Carpenter's hypothesis, that, under favoring circumstances, an ordinary malarial fever can develop into a virulent, highly contagious form.

Question II. Is typhoid fever always the product of a specific contagium from a preëxisting case; or may it arise, de novo, from filth-fermentation?

If the foregoing arguments be valid, they simplify the answer to this much vexed question, and go far to reconcile the dissension which has been long maintained between the followers of Budd and Murchison, respectively. That disorders ordinarily reported as "typhoid" happen where no importation of infection can be traced, is a matter of common observation; but their nature and pathogeny are variously explained. Liebermeister, though guarding his admission with a reference to the many obscure channels through which the specific virus may be conveyed, avows that he has repeatedly remarked cases corresponding in their symptoms with the mildest forms of enteric fever "under circumstances which, to say the least, rendered infection with the typhoid poison extremely improbable." Niemeyer accounts for the *de novo* genesis of "abdominal typhus" in places remote from travel, and where there is "not the slightest suspicion of a contagious origin," by the supposition that the germs of the disease may originate outside of the bodies or dejecta of patients. Cornelius Fox[1] says,—"Although, if my mind be prejudiced at all in the matter, it is prejudiced in favor of the more philosophic view that enteric fever never arises spontaneously, yet my judgment points to the opposite conclusion. . . . The poison of this fever may arise from some unknown changes in the excremental matters of flesh-eating animals, under certain atmospheric conditions, and spread by contagion." The late Dr. Derby, of Boston,[2] imputed even to vegetable decomposition an equal generative potency,

[1] "Disease Prevention." London, 1884, p. 44.
[2] "Second Rep. Mass. Board of Health."

declaring the exposure of ponds and reservoirs in warm seasons to be the most frequent cause of epidemics of typhoid in Massachusetts. Parkes,[1] with characteristic caution, concedes that "although the origin of typhoid merely from putrefying non-typhoid sewage is not considered at present to be probable, it is not disproved." Dr. Robert King,[2] of Middlesex hospital, has advanced the opinion that "the typhoid poison is derived solely from decomposing albumen, which is not present in healthy stools; and that therefore it can only arise from morbid stools which contain albumen, as is the case in some forms of catarrhal diarrhoea." Scores of citations to a similar effect might be made from observers in almost every part of the world, the majority of whom, however, manifestly have in mind the specific unity of the malady whereof they write. On the other hand, among those who have recognised a difference between the sporadic and transmitted cases, may be ranged Prof. Clark, of New York,[3] who assigns the former to the category of "cesspool fever;" Simon,[4] who ascribes to the common septic ferment of decomposing filth, especially of excremental filth, the power of producing "febrile disease, with inflammations numerous and intense, and including in marked degree one of the acutest known forms of intestinal inflammation and flux;" and Sir Charles Cameron, who, in comment on an outbreak of fever caused by the ingestion of milk in which "the only pollution was cow's manure," remarks,[5]—"I am not a believer in the pythogenic theory of typhoid fever, but in the cases above described a disease closely resembling typhoid fever was apparently produced by the presence of decomposing animal matter in the milk drunk by the patients. Perhaps the milk formed merely a pabulum for the materies morbi which had originated in the decomposing faecal matter. . . . Although I do not accept Murchison's theory, yet I freely confess that Dr. Smyly's

[1] "Practical Hygiene."
[2] Quoted by Cayley, Croonian Lect., 1880; also, "Med. Times and Gazette," Aug. 2, 1879.
[3] Cited by Dr. G. B. Shattuck ("Supplement to Ziemssen's Cycl."),
[4] "Reports; new series," no. ii.
[5] Report on Public Health, "Dublin Jour. of Med. Science," Feb., 1882, p. 264.

cases appear to show that decomposing faecal matter in milk is capable of producing a disease, to say the least, resembling typhoid fever. But there may be many forms of disease resembling enteric fever which are really distinct from that malady, and which may frequently have sporadic origins. . . . It would seem as if, under some exceptional conditions, the genesis of toxic principles occurs, and not unlikely may be the cause of many forms of disease which are treated as true enteric fever."

With regard to the "exceptional conditions" under which such septic poisoning is evolved, it should be considered that there is an important difference between ordinary chemical decomposition of organic matter, yielding as its chief products CO_2, H_2O, and NH_4, and putrefactive changes which give rise to various toxic principles, some of which have been already separated, while of others we are still ignorant.[1]

Granting all that can be said of the elusive portability of the virus of enteric fever, its probable capacity of recrudescence after long intervals of quiescence, and its maleficent activity in infinitesimal dilution, there are nevertheless so many well authenticated instances of adynamic fever occurring in isolated rural districts where no connection with a preceding case seems possible, where no sewerage system can serve as a "direct continuation" of a distant "diseased intestine," and where the only discoverable morbific agency is putrescent filth, that we must face the dilemma of either admitting the parthenogenesis of a specific ferment,[2] or, more plausibly, conceding the existence of a separate filth-bred febrile disorder. Investigation of many examples of such apparently home-brewed fever disposes me to believe that they will usually be found to correspond with the description rather of the "irregular" than of the typical form of typhoid.

[1] Brieger ("Die Ptomaine," Berlin, 1885) describes no less than eight putrefactive alkaloids.

[2] Ziegler ("Gen. Path. Anat., trans. Macalister"), though a strong advocate of the "germ theory," writes of typhoid,—"It is probable, or at least possible, that the virus may be also derived from previously uninfected localities; in other words, that it may originate as a pure miasm."

Question III. What part is played by micro-organic ferments in the causation of enteric fever?

This may be put in more definitely interrogatory paraphrase by inquiring if the materies morbi be dependent on the life processes of a particular species of micro-organism, or if it be a tertium quid produced by a modification in the environment, wherein more than one variety of microzyme may act catalytically.

Although there are undoubtedly some kinds of fermentation independent of the presence of any of the bacteridiae, and although thus far the majority of the infectious diseases of mankind have not been demonstrably associated with rec ognisable varieties of micro-organisms, we have enough positive experimental data to warrant the analogical conclusion that the decompositions of proteid substances, to which endogenous or exogenous infective products may be ascribed, do not take place without the admission and multiplication of living organisms. But we have also evidence that pre-existent qualities of the medium are requisite for the development of particular forms of schizophytes, and, in many instances, that the character of the product is determined rather by these qualities of the medium than by the nature of the exciting ferment. Alcoholic fermentation, for example, may be induced in a saccharine solution by various sorts of vegetable cells,—the influence of penicillium glaucum in this respect, together with its frequent appearance in the later stages of fermentation started by simpler fungoid forms, having led some botanists to the inference that the yeast torula, the "vinegar plant," the oidium lactis, and perhaps other supposed species, are intermediate and modified gradations in the life history of penicillium.[1] Bacterium termo, under ordinary circumstances a harmless if not beneficent scavenger, originates morbific putrefactive processes in albuminoid matters.

The "attenuation" of virus by cultivating successive gen-

[1] It is even doubted if penicillium itself be not a transition stage in the development of a more complex fungus.

erations of presumedly pathogenic organisms in milder media until they become nearly or quite innocuous, and, on the other hand, the apparent intensification of septicaemic infection by transmission through a series of susceptible animals,[1] point in the same direction. Sir James Paget,[2] postulating individual susceptibility as a necessary condition for the multiplication of disease-germs, utters the opinion of numerous observant pathologists in adding that "even among those in whom they do germinate, the product varies according to the soil." Ziegler[3] says,—"It does not, however, follow that each kind of decomposition is due to a single specific fungus, nor that one fungus may not give rise to more than one kind of decomposition," and concludes that "one or the other of the properties possessed by a biological species of bacterium may be brought into prominence by proper modifications of the external conditions." This alteration of action by changes in the environment has lent some weight to the doctrine of the polymorphism of the bacteridiae, supported by Billroth,[4] Naegeli, and others; and even Cohn, the oftenest quoted classifier in this department, admits the possibility that "some of such species and genera may really represent different developmental stages of one and the same fungus." In the most modern researches of bacteriology, morphological appearances have been disregarded, and chief reliance placed upon biological behavior in different culture-media, or response to staining agents; and as if to emphasise the insufficiency of our present knowledge, there are investigators of good repute who are yet inclined to assign the bacteridiae to the animal rather than to the vegetable kingdom.

Though the results may not be strictly comparable, experiments in "protective" inoculation have yielded the strongest testimony that the products of certain fermentations are influential in the absence of the ferments which originated

[1] Septicaemia in the mouse is attributed to a bacillus; in the rabbit, to a micrococcus.

[2] "Bradshawe Lecture," 1882.

[3] Op. citat.

[4] Billroth regards the various pathogenic microphytes as interconvertible stages in the growth of a hypothetical "coccobacterium septicum."

them. Pasteur's hydrophobic "vaccinations" are sustained by this hypothesis, for there is no pretence here of "mitigating" a specific "microbe." Professor Law[1] concludes, from careful experimental study of the prophylaxis of swine plague, that "it is the deleterious chemical product of the disease-germ, and not the germ itself, that affects the system so as to secure this immunity." In a paper recently presented before the Royal Society,[2] Dr. Wooldbridge has recorded experiments with cultivations of anthrax-bacilli in an alkaline solution of a proteid body obtained from the testis and thymus. After preservation for two days at a temperature of 37° C. (98.6° F.) the organisms were removed by filtration, when the injection of a small quantity of the filtered liquid into the circulation of a rabbit enabled the animal to resist the inoculation of extremely virulent anthrax blood; while "the bacillus itself, grown in this peculiar culture fluid, has no protective influence: it either kills, or has no effect."

In the special application of the germ theory to enteric fever, different forms of microphytes have been described by successive writers. Hallier thought that the spores of penicillium crustaceum were the efficient contagia viva; later on, several observers agreed upon the specific nature of a micrococcus, Letzerich claiming to have demonstrated the transmission of typhoid fever by inoculation of rabbits. At present, bacteriological opinion is united on the merits or demerits of a short bacillus with rounded ends, found in infiltrations of the intestinal and mesenteric glands by Eberth, and endorsed by Koch, Gaffky, and many others, who assert that the forms discovered by previous microscopists are accidental subsequent invasions of the diseased tissues. An elaborate study of the habits of this "typhoid microbe" emboldens M. Chantemesse[3] to announce that it sporulates at a temperature between 19° and 40° C.; that it can thrive even

[1] "Contagious Dis. of Domest. Animals," Rep. Depart. of Agriculture, Washington, 1881.

[2] Cited in "Brit. Med. Jour.," May 21, 1887. See, also, a leading article on "Protective Inoculation," ibid., Nov. 27, 1886.

[3] "Brit. Med. Jour.," April 9, 1887, p. 789.

in sterilised water; that it survives for several days a heat of 45° C. (113° F.), though destroyed by boiling; that it retains its vitality in damp ground; that it is killed by corrosive sublimate (1 in 20,000) and quinine (1 in 800), but is not affected by carbolic acid (1 in 400), nor by hydrochloric acid, so that the acidity of the gastric juice does not prevent its development. Subsequent culture experiments by M. Gabriel Pouchet,[1] using material obtained from M. Chantemesse, lead him to the curious statement that the bacillus multiplies more readily in pure than in impure water, and that its development is in inverse ratio to the amount of organic matter present in the medium, increasing in peptonised gelatin in proportion to the reduction of the peptone toward one per cent. M. Pouchet alleges that the most favorable medium is prepared from portions of intestine cleansed from all faecal matter and mixed with gelatin, as in the case of veal broth. He also asserts that acids, as well as salts of copper, potassium, and ammonium, retard the growth of the microphyte.

When it is remembered that a few days in the successive generations of the schizomycetes are equivalent to centuries in the evolution of higher forms of life, what we know of the variations of structure and function impressed upon the latter by alterations of the environment may prepare us to admit the possibility, if not the probability, that similar variations may occur in the former, and that more than one of these may adapt themselves to their surroundings, and acquire physiological properties which they may transmit to their progeny until these in turn are adapted to altered circumstances.

Question IV. Is there a disease of the lower animals transmissible to man as typhoid fever?

This question can only be intelligently discussed by those who are versed in veterinary pathology; and among observers in this department diverse views have been expressed.

[1] "Brit. Med. Jour.," June 18, 1887, p. 1347.

The list of disorders common to, but differently manifested in, the lower animals and man has been considerably lengthened by recent inquirers; whether some of the latest additions deserve their place, is a matter for farther experimental investigation. Diphtheria has been associated, not only with a similar angina in fowls, but with aphthous fever in cattle.[1] Klein endorses the belief of Mr. Power and others, that scarlatina may be transmitted by the milk from cows with a febrile eruption on the udders, and asserts the identity of a streptococcus found by him in the eruptive vesicles, in milk, and in the blood of human and simian scarlatinal patients; and the possible transmission of tuberculosis by milk from cows affected with "perlsucht" is still under deliberation.

As concerns the occurrence in brutes of a communicable malady analogous to enteric fever, much confusion has doubtless been hitherto caused (as in human pathology) by the indiscriminate use of the adjective "typhoid." Thus, Tanner[2] is misled to argue against the alleged virulence of the stools of enteric fever patients, because they do not infect pigs, which animals he declares to be susceptible to "enteric fever"—ignorant that the name, "pig-typhoid," is applied to a zymosis differently defined; and numerous articles in past medical literature may have been based on similar errors. Beside the porcine genus, hares (Becquerel) and hounds (Küchenmeister), horses (Servoles) and other domesticated beasts, have been credited with a more or less close imitation of the human ailment; and Dr. Spitzka, in a letter to the "British Medical Journal" (Oct. 30, 1886), affirms that "at least one epidemic of rabies, published and accepted as such without a word of criticism, was one of typhoid fever in the dog."

The controversy between Griesinger and Liebermeister, as to whether an outbreak of disease following the ingestion of partially decomposed meat by a number of persons at Andel-

[1] Dr. Robinson, of Dover, "Brit. Med. Jour.," March 22, 1884; and Mr. Wacher, of Canterbury, ibid., Aug. 21, 1886.

[2] Practice, 5th Am. ed., p. 237.

fingen was typhoid or trichiniasis, led the latter author, when his parasitic theory was refuted, to announce the probability that "there is a particular disease produced by meat-poisoning"—an idea subsequently supported by researches in the chemistry of the ptomaines. At a festival at Kloten, two thirds of the participants were attacked by an illness pronounced, on the strength of several necropsies, to be typhoid fever, and ascribed by Huguenin to eating specifically diseased veal. Persons at a distance were similarly affected after consuming portions of the same animal, and Walder reported the apparent transmission from calves at Kloten to other calves of "a disease producing intestinal and glandular lesions resembling those of typhoid fever in man.[1] Dr. J. F. Allen, health officer of Pietermaritzburg, Natal, records an uniform connection between typhoid fever among residents in the neighborhood of a dairy farm and an infectious specific enteritis among calves, in which he found "the mesenteric glands enlarged, and in the intestinal mucous membrane evidences of the same diseased action as is to be found in that of human beings after death from enteric fever: thus, ulceration and patches of inflammation involving Peyer's glands are to be found in both diseases."[2] The medium of transmission in these instances is left to conjecture, as there is no intimation of the consumption of the diseased meat; and, indeed, since veal is seldom eaten raw or even underdone, it appears hardly intelligible that the germs of infection should withstand the heat of cooking. With reference to the earlier reported coincidences of typhoid and moschophagy,[3] Prof. Law some years ago wrote,[4]—"It seems altogether probable that a mistake has been made, and that the calves and their victims died of trichiniasis, intestinal anthrax, or of some other poison common to man and animals; but it should at least be shown by

[1] Quoted by Dr. Shattuck, Supplement to Ziemssen's Cyclop., from Berlin. klin. Wochenschr., 1878.

[2] Lancet, Nov. 20, 1886, and Jour. Am. Med. Ass., Mar. 12, 1887.

[3] From the Greek word μόσχος, a calf, with apologies to the S. P. C. A. for the cruel neologism.

[4] Rep. Nat. Bd. of Health, 1879, p. 156.

the National Board of Health that the danger of the alleged transmission of typhoid fever is altogether fanciful." In later private communications from Prof. Law, after expressing his design to make farther investigation into the liability of the lower animals to typhoid fever, he says,—"The first suggestions in this direction, I believe, ascribed the infection to veal; and considering that the calf is much more impressible than the adult ox, and that it is less of a herbivorous animal and therefore in a sense more nearly related to man, I opine that experiment should begin with the calf." In a subsequent letter, he adds,—

This, however, may be confidently stated, that cattle suffer from a contagious dysentery and also from a contagious diarrhoea. That certain fermentations of organic matters outside the animal body can induce in cattle a *low* fever with intestinal lesions, implicating the agminated glands in some instances, and usually the mesenteric glands, is shown in the case of rinderpest, Texas fever, and intestinal anthrax. That other unknown filth-ferments and their products are capable of producing allied results is altogether probable. Indeed, what has been called *malignant catarrh* of cattle, which, like rinderpest, affects all the mucous membranes, is one other instance of this kind. As you now put the question, not as to the causation of the *specific typhoid* or *enteric* fever, but of a typhoid fever simulating enteric and associated with glandular intestinal lesions, I have no doubt at all that certain conditions of diseased beef will bring it about. Perhaps certain fermentations in otherwise healthy beef will have a similar effect.

I cannot suppose that the aphthous or eczematous fever of bisulcates is the equivalent of diphtheria. When uncomplicated, it produces in man as in animals not a diphtheritic pellicle, but a distinct and large vesicle with clear or amber contents. That the diphtheritic poison may be superadded to it in some cases is quite possible. I do not remember Power's investigations on scarlatina from mammitis well enough to speak of them; but, considering what a fine field for bacterial growth is furnished by milk, and how favorable the milk-ducts secluded from the air must be for the preservation of a potency which is associated with the consumption of a limited amount of oxygen, and with life in a neutral or alkaline medium, it would not be at all surprising if the germs of scarlet fever, as well as those of diphtheria, should be transmitted through this channel.

The agency of milk in the dissemination of various zymotic disorders is now universally conceded, and many outbreaks

of "typhoid" fever have been indisputably traced to this source. In most instances, however, an explanation has been sought either in the admixture of sewage-polluted water, or in the capacity of milk to absorb specific organic products from its environment, or—since Prof. Vaughn's discovery of "tyrotoxicon"—in a hypothesis that decomposition of the milk itself might evolve an efficient virus. The observations of Sir Charles Cameron, above cited, point to another possible source of extraneous contamination, and merit serious consideration. But if there be any reason to believe that a zymotic malady resembling typhoid fever, and perhaps communicable to man, occurs in sucking calves, it is not unreasonable to admit the possibility that the infection may be conveyed in the freshly secreted milk which is their only food; and it becomes an affair of deep importance to verify or disprove the suspicion stated by Greenfield, "that typhoid fever and diphtheria may in some cases be communicated to the human subject, not merely by milk, but through the cow, by some modified disease which we do not know."[1]

Question V. What media of causation or transmission of typhoid fever are to be guarded against in public or private sanitation?

Whatever views be held as to the specific or pythogenic origin of typhoid fevers, as to their unity or diversity, nearly all are agreed that filth affords the vehicle for their development and dissemination; and experience has amply demonstrated the efficacy of safe refuse-disposal and purity of water-supply in arresting their ravages.

The most frequent medium of infection is contaminated water, and it is surprising to note in what extreme dilution, and at how far a distance from the source of contamination, the poison may act. In the disastrous epidemic at Plymouth, Penn., the excreta from a fever patient, carried by the melting snow into a mountain stream, conveyed disease to hundreds

[1] Lancet, Vol. I, 1880, p. 83; Shattuck, loc. citat.

of persons more than two miles away. At Over-Darwen, where an ill-jointed water pipe crossed a leaky water-closet drain, the advent of a visitor with typhoid fever was followed within three weeks by the sickening of two thousand people. At Caterham the casual defaecation of a "walking case" of typhoid in one of the large, deep wells of the water company distributed the malady along the mains to two adjoining communities. At Lausen, in the Jura, seventeen per cent. of the inhabitants were infected by water from a spring fed by a stream contaminated with typhoid dejecta, which had percolated several thousand feet from the Furlenthal valley, salt being experimentally traced from one point to the other.

In districts without a public water-supply, the pollution of surface wells by infiltration from pervious privy-vaults and cesspools, through distances varying with the character of the soil, is the most fruitful source of danger. Admitting the difficulty of disproving the possible migrations of "ambulant" enteric cases, many observations in isolated rural places support the inference that faecal pollution of wells, without the introduction of the specific fever-virus, may produce the result. Water thus contaminated may sometimes be drunk with apparent impunity for a long while, and yet, at an unexpected moment, perhaps through either greater concentration or through some undiscovered change in the processes or products of fermentation, give rise to a "pythogenic" typhoid outbreak.[1] Soakage from cemeteries,[2] heavily manured land, barnyards, and other accumulations of putrescent animal matter, seem to be capable, under certain undetermined conditions, of inducing similar effects. Where specifically infected dejecta find ingress, their potency may be manifested in infinitesimal dilution, and a water beyond suspicion from

[1] "The disease is frequently produced by drinking-water which is found to be polluted with animal matter, but not with specifically tainted matter. As regards these cases, the most careful inquiry has failed to discover any connecting link between them and pre-existing cases, while in all of them it has been found that the well-water has been polluted by leakage from some cesspool, privy, or drain. It may be said, therefore, that though they are essentially pythogenic, they are not specific." Wilson, Handbook of Hygiene.

[2] *Vide* Chadwick, Rep. on Interment in Towns, 1843; Sir H. Thompson, Con. Rev., Jan., 1874; Adams, 6th Rep. Mass. B. of H., 1875; Eassie on Cremation, Lond., 1875, etc.

the chemical analyst's point of view may be as deadly as the Borgian wine or Aqua Tofana.[1] The filtering and nitrifying power of the soil may easily be overtaxed, or, where the greater part of the organic matter is thus removed, the morbific ferment may pass unaltered.[2] Nor can reliance always be placed on artificial filtration; most of the substances used for this purpose permitting the transit of, and even after a short time becoming breeding-grounds for, microzymes. The simplest and most efficient method of purification is boiling for half an hour, and this should be advised wherever the quality of water is suspected. As regards public sanitation in this respect, with all due deference to our chemical colleagues, the only safe rule is the one laid down by the wisest of sanitarians, John Simon, that "It ought to be an absolute condition for a public water-supply, that it should be uncontaminable by drainage."

The popular superstition that water purifies itself in freezing is quite contrary to fact, and several outbreaks of disease have been traced to tainted ice. Dr. T. M. Prudden has recently affirmed, from laboratory evidence, that the typhoid bacillus retains its vitality after prolonged congelation, and imputes many cases of fever to Hudson river ice.[3]

That polluted air is a frequent medium of infection is generally recognised, from the aristocratic circle of the Prince of Wales to the squalid dwellers in the slums. And here, again, as in the case of polluted water, fever apparently of pythogenic origin arises where it is impossible to imagine any specific importation. Exhalations from foul and unventilated sewers may insidiously find access to the most luxurious

[1] For a farther exposition of this argument, see a paper by the author on Potable Water, 6th Rep. N. Y. State B. of H., p. 56 *et seq.*

[2] At Pierrefonds, last autumn, M. Chantemesse found the bacilli described by Eberth in a well into which percolation occurred from a cesspool in sandy soil, a fresh outbreak of enteric fever arising among the occupants of three houses so supplied twenty days after each rain-fall. In one family nearly all the members were sickened by a single imbibition of the well-water, although four of them had previously had typhoid fever. Dr. Brouardel, who conducted the investigations here and at Compiègne, advances the facts as proving that filtration through soil may permit dangerous organisms to pass while deodorising and removing grosser impurities. The excellent experimental researches of Prof. Pumpelly (Rep. Nat. B. of H., 1882, p. 580 *et seq.*) lead to the same conclusion.

[3] Paper before N. Y. Acad. of Med., March 17, 1887, Jour. Am. Med. Ass., April 9, 1887.

abodes; indeed, as wealth multiplies its domiciliary conveniences, it also multiplies the channels of possible invasion; and, moreover, the pressure of accumulating gases and vapors is greatest at the highest points of sewerage, where fashion usually seeks residence. The "combined system" of large sewers has the inherent fault that in seasons of scanty rainfall adequate flushing is impracticable, and it is apt to become little better than a meshwork of "elongated cesspools;" while in far too many instances, under corrupt political contracts, graver perils have been added by shameful shortcomings in construction. The household dangers are not alone from bad workmanship on the part of the often unjustly abused plumber, nor from accidental siphonage of traps, but sometimes from emptying of the "water-seal" by the capillary action of overhanging shreds of lint or hair, and oftener from evaporation of the contents of unused traps.[1] This latter risk is increased by the separate ventilation of the crown of the trap, which, whatever its advantages in other respects, doubles the surface of evaporation. A film of oil, floated in the traps of a house or room to be vacated for even a few days, may serve as a protection. It ought to be superfluous to declaim against the unmitigable nuisance of the "pan" water-closet, but unfortunately its cheap-and-nastiness still occasionally makes it an example of the survival of the unfittest. Even with a properly constructed and well flushed sewer, the house-drains should be guarded by a running trap, between which and the house should be an inlet for the circulation of pure air into and through the soil-pipe continued above the roof. No excellence of handicraft should be allowed to excuse the omission of these precautions.

The indraught of the ground air from a filth-saturated soil may be as pestilential as the direct emanations from a sewer, and the more porous the soil the farther may the poison

[1] The seeming mystery of the often noted occurrence of typhoid fever and other zymotic ailments after the return of families from a summer vacation to their city houses may frequently be thus explained.

travel. Not only on rubbish filled "made ground," but in scores of picturesquely situated towns and villages, has this been proven, and cellar floors and foundation walls must be impervious to avert the possible invasion from neighboring filth-foci.[1] Fluctuations of the ground water, by alternately moistening and exposing to fermentation putrescible matters in the soil, or by transporting such matters nearer to habitations, may add to the danger; but Pettenkofer's theory, connecting the development of typhoid fever with a low level of the ground water, has not been borne out by observations in other parts of the world.

The protection of food-substances, especially of milk, from contamination with enteric virus is not only a matter for private circumspection, but ought to be extended to public supervision of dairies; and it should be remembered that infection may be transferred to these and to potable water by aerial pollution without apparent material contact.

The fear, still entertained by a very few physicians, of extension by immediate personal contagiousness is probably based upon insufficient investigation of the aetiology of obscure cases, and is opposed to the immense mass of hospital statistics, which indicate, almost to positive demonstration, that the dejecta alone elaborate the poison. And innumerable observations also show the fact (difficult of explanation from a purely bacteriological point of view) that the freshly voided excreta are devoid of infectious properties,—a certain stage of secondary fermentation outside of the body seeming to be requisite for the coction of the contagium. The period of innocuousness may be assumed to be seldom, if ever, less than twelve hours; so that ample time is given for preventive procedures. That the development of the virus takes place in clothing soiled with the discharges is evidenced by

[1] "A house may be built on a thoroughly dry body of sand or gravel, and its cellar may be far above the level of the ground water at all times, and it may yet be in danger of having the air of its rooms contaminated by the germs from leaching cesspools and vaults; for, if the drift of the leaching be toward the cellar, very wet seasons may extend the polluted moisture to the cellar walls, whence, after evaporation, the germs will pass into the atmospheric circulation of the house." (Pumpelly, op. citat., p. 582.)

the frequent occurrence of the disease in laundresses not otherwise exposed. In relation to the persistence of infectivity in the excreta of patients, Drs. Shbolansky and Stroganoff, of Odessa, in daily examinations of the stools of three convalescents, found Eberth's bacillus in two instances for nine and fifteen days respectively after the defervescence, while in the third none were seen after the temperature had become normal.[1]

The problem as to methods of disinfection has been somewhat complicated by recent researches with culture tubes and microscopes, which have not yet definitely solved the question whether a disinfectant must necessarily be a "germicide," or whether an antiseptic may not be equally effective by depriving pathogenic bacteridiae of the "means of subsistence;" and laboratory faith is pinned chiefly on chloride of lime and corrosive sublimate. The first of these is efficacious, if well preserved, in solution of from two to five per cent.; the second is objectionable for family use on account of its extremely poisonous nature, its corrosive action on lead waste-pipes, and its neutralisation by albuminous substances. For soiled articles which it is inexpedient to destroy by fire, boiling will suffice, and if this cannot be immediately done, they may be temporarily immersed in an antiseptic solution.[2] The common country practice of burying the discharges without previous disinfection may be a source of danger. For privies or cesspools, chloride of lime in saturated solution or in substance, and sulphate of iron, may be used.[3]

Although typhoid fever seems to attack by preference robust young adults, all are not equally susceptible to it, and

[1] Quoted from "Vratch," in "Brit. Med. Jour.," June 25, 1887. It should be mentioned, however, that the bacilli are said to have been discovered in but 90 out of 96 cases during the progress of the malady.

[2] Disinfecting agents, as arranged by Sternberg (Lomb Prize Essay, 1886), in the order of their supposed value, are,—In the presence of spores, fire; steam (25 lbs. pressure); boiling water; chloride of lime (2 to 6 per cent.); liquor sodae chlorinatae; mercuric chloride (0.1 per cent.). In the absence of spores, dry heat (230° Fahr., for two hours); sulphur dioxide; carbolic acid (2 to 5 per cent.); sulphate of copper (5 to 10 per cent.); chloride of zinc (5 to 10 per cent.).

Despite the theoretical discredit lately cast upon copperas as a "germicidal" disinfectant, practical experience has long retained it in favor.

temporary disturbances of digestion probably have a predisposing influence.[1]

Finally, in all preventive considerations the health officer must bear in mind the possible importation of infection by the overlooked diarrhoea of "ambulant" cases, or those of long incubation; though he may with reasonable confidence impress upon the people under his care Parkes's dictum that "a single case of typhoid fever should at once be held to prove that something is wrong with the mode of getting rid of the excretions."

Question VI. What are the complications and sequelae properly associated with typhoid fever?

It may be broadly stated that there are three classes of phenomena to be noted,—those directly dependent on the local solutions of continuity; those arising from secondary degenerative changes; and those presumably caused by the absorption of septic products. Under the first category belong such common accidents as intestinal haemorrhage and perforation. The second comprises circulatory failure, hypostatic congestion and oedema, thrombosis, embolism, and infarctions, cerebral or meningeal extravasations, anaemia or decadence of the nervous centres, parenchymatous nephritis, fatty metamorphosis of the liver, disintegration of muscular and other textures, sloughing, etc. To the third may probably be assigned peritonitis without perforation, furuncles, lymphadenitis, parulis, parotitis, some examples of lobular pneumonia, laryngeal ulcerations, meningitis, and other rarer incidents.

Whether relapses or recurrences be due to reinfection or to incomplete elimination of the virus, is still disputed by conflicting authorities; the preponderance of circumstantial evidence is, however, strongly in favor of the latter hypothesis.

[1] There may possibly be more than a mere coincidence between the circumstances that bile acts as an intestinal antiseptic in preventing putrescence and bacterial multiplication, and that deficiency of bile is early noticed in typhoid discharges.

Question VII. What are the indications for treatment, and are relapses or untoward complications favored by some antipyretic measures?

Belief in a specific poison naturally tempted to the search for a specific antidote, and even in the pre-microbial era empirical gropings were made in this direction with mercury, iodides, quinine,[1] chlorine, sulphuric and other mineral acids.[2] Homoeopathic philosophy invented some years ago a specific "similimum" in the venom of a South American viper, and the "Eclectic" fraternity has vaunted the virtues of Leptandra, Gelseminum, and Baptisia.

With the promulgation of the germ-theory entered a hope that agents capable of destroying the noxious invaders might suppress the disease; but this hope has been dashed by the experimental intimation that a sufficient dosage to kill the bacillary spores would almost inevitably kill the patient also. Moreover, if we accept the teaching of patho-biology, that micro-zymotic maladies mean a struggle for existence between the animal cells and the fungoid intruders, and that an important part in the battle is played by the amoeba-like bacteriophagous capacity of the leucocytes,[3] common-sense must give warning against any measures which may reduce the vigor of the repelling garrison.

From a different point of view, regarding the gastro-intestinal discharges as Nature's means of expelling the peccant matter, eliminant efforts have been advocated, from the initial emetics of the older writers, and the saline cathartics of the French school, to the German method of early purgation with calomel, the good effects of which are ascribed partly to its evacuant, partly to a supposed specific, action.

The generally accepted doctrine, that acute morbid processes are self-limiting if the patient can be sustained until

[1] Dr. C. Cleveland ("Proceedings of Practitioners Soc., Med. Record," Nov. 20, 1886) thinks that typhoid fever can be aborted in the early stage by the germicidal action of large doses of quinine.

[2] A marked diminution of mortality in the fever-ward of Bellevue hospital in the later months of 1868 was coincident with the administration of dilute sulphuric acid, as shown in a tabulation made by Dr. Irving Lyon.

[3] *Vide* "Erasmus Wilson Lectures on Evolution in Pathology," by J. Bland Sutton, 1886.

their natural termination, gives warrant for a clinical attitude of watchful expectancy, prepared to avert intercurrent dangers if they arise, treating the patient rather than the disease, and in each case vigilant to "obviate the tendency to death." With this regard, avoidance of insanitary surroundings is as important in a therapeutic as in a preventive aspect, for little can be expected from treatment if the sufferer be continuously subjected to the original source of his infection, or to influences adverse to healthy function. Purity of air, water, and soil is essential to recovery as to preservation of health.

Another prime indication is to maintain nutrition while imposing the least possible tax upon the inflamed intestinal tract; and for this purpose milk, in small quantities and often, slightly alkalinised with lime-water, or, if need be, "pancreatinised," and uncooked egg-albumen constitute our chief resources.[1] Alcoholic stimulants in moderate amount may be indicated in enfeebled circulation or high pyrexia, but are not necessary in favorable cases. A plentiful supply of pure cold water deserves prominent place among our analeptics and febrifuges. Symptomatic medication has drawn upon a large array of drugs, such as opiates, vegetable astringents, acetate of lead, turpentine, ect., some of which may be useful as too profuse diarrhoea, haemorrhage, peritonitis, or other complications supervene.

Forasmuch as a fatal issue in uncomplicated typhoid fever is usually through either heart-failure or cerebral paralysis, and these have been considered by modern pathologists as direct results of hyperpyrexia, a specialised "antipyretic" treatment threatened at one time to become an affair of unreasoning routine, and is still on trial. Commencing with drugs like digitalis and veratrum viride, which may be supposed in some way to lessen the production of heat, a long stride was suddenly made to the artificial abstraction of heat,—begging the fundamental question whether the phenomena of fever depend on increased evolution or retarded

[1] "Strong" meat broths leave more or less solid residue to be excreted through the irritated bowel, while "beef tea" is nearly synonymous with starvation.

radiation of caloric, and whether thermogenesis be diminished or increased by external cooling agents.

Dr. Macalister,[1] after defining the "anabolic" and "catabolic" thermogenetic and thermolytic nervous mechanisms, has shown that there may be augmented thermogenesis unindicated by high temperature, or, on the other hand, high temperature without "fever," and that cold may arrest the motor function of muscles without appreciably lessening their calorific action. Niemeyer[2] declares that the reduction of the body temperature by cold baths augments thermogenesis, and likens artificial withdrawal of heat to the effect of excessive exercise, which would certainly be unadvisable for an already exhausted patient; and he frankly ascribes some early deaths from exhaustion to his adoption of such treatment. A condition approaching collapse has so often followed the cold bath that any sign of cardiac weakness is commonly considered as precluding its use.[3] Since superficial cooling contracts the cutaneous vessels, and therefore induces greater fulness of the deeper-seated ones, a tendency to haemorrhage or internal congestion has been rationally regarded as a contra-indication. MM. Tripier and Bouveret,[4] however, have pushed cold bathing to the extreme throughout the whole course of the disease, irrespective of pneumonic complications, or even of menaced collapse, and disbelieve any enhanced danger of haemorrhage. Although comparative statistics are apt to mislead, there seems to be ground for asserting the greater frequency of relapses under the treatment by cold baths. Goltdammer,[5] from an enormous experience, admits this, but explains it by the hypothesis that more patients are saved who would otherwise have died during the first attack. Immermann,[6] on the contrary, shows

[1] "Gulstonian Lectures on the Nature of Fever," 1887. [2] Op. citat.

[3] Even a spontaneous sudden reduction of the fever-temperature is known to be ominous of fatal syncope.

[4] "La Fièvre Typhoide traitée par les bains froids," 1886. Sokolow and Wörtekewitsch (quoted in "N. Y. Med. Jour.," March 12, 1887) claim equally beneficial results, even in complicating pneumonia, from treatment with draughts of cold air for from fifteen to twenty minutes at a seance.

[5] Quoted by Shattuck, loc. citat., from "Arch. f. klin. med.," 1877.

[6] Ibid. Immermann supplements hydrotherapeusis with "disinfectant" prescription of sodium salicylate, whereby he claims to have reduced the number of relapses.

about fifty per cent. increase in the proportion of relapses, which he attributes largely to interrupted elimination of the poison. Unbiased investigation will, I think, justify the statement that while in particular instances baths may be advantageous for the palliation of certain conditions which we do not know how to abate in other ways, their routine adoption is to be deprecated.[1] Localised cooling, by means of the abdominal coil or ice-cap, is not open to the same objections, and may oftener be serviceable. Cold enemata, as administered to some extent in continental Europe, have theoretical arguments in their favor, but are hardly practicable in Anglo-Saxon private practice.

Professional attention has recently been much attracted to the remarkable temporary reduction of temperature induced by "antipyrin,"—a name rankly redolent of empiricism,—of the modus operandi of which we know nothing beyond the rather startling announcement that in the lower animals it acts, in quasi-moderate doses, as primarily an excitant and secondarily a paralysant of the cerebro-spinal axis, and, in larger amounts, causes cardiac paralysis. Whether these phenomena point to its remedial influence as stimulating the "anabolic" or inhibiting the "catabolic" nervous centres, must be left for future neurologists to decide. Its value in giving the patient a recess, so to speak, from the trying discipline of a continuous hyperpyrexia is undisputed. As far as the few published records indicate, however, it appears neither to shorten the duration of the malady nor to augment the proportion of recoveries, and private observation and inquiry have suggested a suspicion that relapses are commoner under its sway. In some, fortunately rare, examples, it has produced or invited untoward results, ranging from cutaneous eruptions, exhausting perspiration, and severe gastric derangement, to alarming collapse.

An even later novelty, with an equally objectionable title, has been brought to light in "antifebrin,"—derived from

[1] Tepid baths or wet-sheet "packs" are not now considered as belonging to the category of "antipyretic" agents. The same may be said of sponging the surface of the body, which, though refreshing to the patient, has little or no effect in reducing the fever-heat.

anilin by means of acetic acid,—which is said to cause no alteration of the temperature in health, though reducing pyrexia more effectively, if less promptly, than antipyrin. Its toxicology has not yet been satisfactorily investigated, but in therapeutic doses its observed action is to retard the pulse while increasing arterial tension, to produce flushing of the face and occasionally a cyanotic condition, and to promote diaphoresis and diuresis.

It has already been hinted that the febrile process may perhaps be due to blood-poisoning from retention of the products of retrograde metamorphosis, and with this view Dr. Albert Robin[1] advances cogent arguments against most of the so-called "antipyretic" agents. He points out that the excretion of both urea and carbonic acid is decreased in typhoid fever, and that pyrexia, though accompanied by increased disintegration, is characterised by defective rather than excessive oxidation; hence he urges that therapeutic efforts should be directed to exalt oxidation, which renders soluble and disinfects nitrogenous waste-matters. According to his observations, "antipyrin" markedly impedes this result, and large doses of quinine have the same effect. Cold baths, on the other hand, he classes,—with oxygen, chlorate of potash and other haloid salts, alcohol, and milk-diet,—among his oxidising means.

In this, as in other medical difficulties, it is easier, and less profitable, to propound questions than to answer them. I trust, however, that even the cursory glance which has been given at the immense mass of apparently conflicting testimony relating to the subject of our discussion will afford excuse for my trespass upon your listening good nature, and serve as a not unfitting introduction to the probably more interesting papers which are to follow.

[1] "Gaz. Med.," Dec. 25, 1886.

QUESTION I.

DOES THE TERM TYPHOID FEVER PROPERLY INCLUDE ALL THE VARIETIES DESCRIBED BY OBSERVERS; OR ARE THERE OTHER, STILL UNDIFFERENTIATED, CONTINUED FEVERS COMMONLY GROUPED UNDER THIS HEAD?

QUESTION II.

IS TYPHOID FEVER ALWAYS THE PRODUCT OF A SPECIFIC CONTAGIUM FROM A PRE-EXISTING CASE; OR MAY IT ARISE, *DE NOVO*, FROM FILTH-FERMENTATION?

Discussed by EDWARD G. JANEWAY, M. D., of New York County.

It is a matter of no little difficulty to meet upon exactly the same platform in the discussion of the first of these questions. The question might perhaps be better put as follows, at least provisionally: Do we encounter in this state a form of continued fever not due to typhoid poisoning, and liable to be mistaken for it?

Each one who has had any experience in practice must admit to having had doubts as regards the nature of the poison which has excited fever in patients under his charge. In large cities, typhus and relapsing fevers are liable to occasion a trouble not recognised by practitioners in the country. These, however, do not come within our province, as they have already been differentiated by the absence of the specific lesions, as well as by the difference in the clinical history, when we come to deal with groups of cases, or with well marked illustrations of either.

As regards the possible farther differentiation of the ordinary continued fever, as we encounter it particularly in the fall, I entertain just doubt, both because I have yet to meet a post-mortem examination which would uphold me in such differentiation, and because I have met with groups of cases influenced by the irritation of the typhoid poison, showing such wide divergence as regards symptoms, duration, and condition. Much of the assumed want is due to the tendency fostered by too many of the accounts of the disease given in books, or developed in students as the outcome of very dogmatic lectures on typhoid fever. Wunderlich's fever-curves and those of his followers are in part responsible for this also. Typhoid fever is no more bound to rigid rules than pneumonia. Perhaps the greatest cause for mistake exists in the frequency with which diarrhoea may be absent in cases of typhoid fever, particularly in the earlier stages of the disease, though not infrequently throughout the whole course. When we recall the fact that students have crammed into their brains certain particulars as diagnostic of typhoid fever, prominent among which are diarrhoea, rose-colored spots, and haemorrhage from the bowels, we do not wonder that they entertain doubt as to the nature of a continued fever from which these are all absent. Moreover, when added to this we have a duration shorter than the average, this doubt becomes increased. The writer has met a number of physicians practising in the country, and also in the city, who have been in the habit of making separate classes of simple continued fever and of typhoid fever, owing to the fact mentioned above, the absence of anything beyond fever in the first category.

More lately, it must be confessed, the term typho-malarial has been seized upon to comprise the simple continued fevers. Not only have the causes of which I have spoken led to this, but also the assumed necessity of an early diagnosis. A physician is called upon to attend a patient suffering from a fever, and the friends are clamorous for a name. Too frequently the physician assumes that the family will deem

him ignorant if he do not immediately label the disease with an appropriate term; and then, having once committed himself to it, he dreads to change the nomenclature with the change in symptoms and the continuance of the disease. Moreover, this method of procedure has a bad effect upon his own mind, and begets misconception and doubt. The writer has met with as many as twenty cases of typhoid fever in a single year, which had been called remittent, malarial, typho-malarial, or simple continued fever, in their earlier course. Some have, moreover, endeavored to show that the type of the disease has changed, and that there is very little of the old-fashioned typhoid fever in existence. The writer does not think that the type has changed so much as the diet and treatment, and hence has come about much less frequency of diarrhoea. Beef tea was largely the diet of the past, milk of the present, generation. Antipyretic measures are the feature of the present plan of treatment; expectancy formerly held sway, or, still previously, over-stimulation. I can recall the time when the word fever was equivalent to ordering from one half to one ounce of whisky or brandy every two to four hours. The name was too often treated rather than the patient. When I was a student of medicine, a fellow-student was sick with fever supposed to be due to acute nephritis, and was accordingly purged and sweated by his attendant physician, a professor, until the late Dr. Clark, seeing the patient during the second week, noticed an eruption on the abdomen. The name of the disease was changed to typh-fever; the nephritis was considered secondary; all purging and sweating was discontinued, stimulants taking their place. I allude to this here because it early forced upon me the conviction that names were given too much latitude in the treatment of disease, and because it illustrated how easily we are misled from the true scent by a complication.

Not only do the considerations which I have mentioned tend to beget a doubt in the mind as to the unity of continued fever, but also the occurrence of cases of disease in which fever is a prominent factor, and in which the diagno-

sis of continued or typhoid fever has been first made, but where the true cause of the fever is a hidden inflammation, a tuberculosis, ulcerative endocarditis, osteo-myelitis, trichinosis, etc. When such cases occur under the mask of a continued fever,—and the writer has witnessed instances of each of these diseases being considered typhoid or typho-malarial fever,—an autopsy or some positive diagnostic sign is needed to give a clear idea of the nature of the process.

Those who are engaged either in private practice in the city, or in country practice, where autopsies are hard to obtain, become the prominent upholders of the divisibility of typhoid fever. The writer has had the opportunity of observing outbreaks of typhoid fever in different institutions, and hence of noticing the divergence of symptoms in those attacked, as well as the difference of nomenclature given to the disease by those early in attendance. He has also in these instances become impressed with the variation of the cases in duration and results. In each instance—in one institution 50, in another 70, in another 30, in another 50 inmates becoming sick—a number of the cases terminated favorably within the first ten days, notwithstanding that in many of them the initiatory phenomena were as severe as in those passing through the disease.

It should be added that the subsequent course of the disease in others attacked, or autopsies in those who died, proved the nature of the process. No doubt exists in the writer's mind, as a result of the study of the course of the disease in these institutions, that a great many cases of mild typhoid fever, or perhaps more properly typhoid febricula, when occurring as isolated cases, are considered as malarial fever, simple continued fever, "sewer-gas" fever, etc.

To show more conclusively the reason for the writer's conviction in this matter, the following illustration will suffice:

A young man was admitted to Bellevue hospital severely ill with a continued fever, of which the diagnosis of typhoid was made, and in which an autopsy proved the nature of the disease to have been typhoid. The writer had observed this

case, and wished to study its aetiology, especially as the young man had stated that his room-mate was ill with a fever contracted at the same time. A visit to his late residence disclosed the fact that the family were attending the funeral of this room-mate, who had died—according to the burial certificate furnished by the physician who had attended him, a man of large experience—from typho-malarial fever.

As regards the term typho-malarial fever, moreover, the writer, from what he has observed, is decidedly of the opinion that a very large proportion of the cases so-called occurring in this latitude are pure typhoid fever, the name having been given either because of the remittent character of the fever in the first week, or from the absence of the more particularly marked signs of typhoid fever, or because of the decided daily changes of temperature existing in the latter part of the course of typhoid. He has not seen any reason to create a special class to be known as typho-malarial because of the proof of a separate process, but, if at all, because in certain cases poisoned by previous malaria, when typhoid fever occurs, the clinical phenomena warrant the belief of a modification of the symptoms by the coexistence. The use of the separate name has in a number of instances proved disadvantageous by engendering in the mind of the practitioner the idea that the disease was not contagious, and did not require the preventive measures adopted against typhoid fever. In this aspect of the case it would be wiser to stick to the nomenclature of typhoid, and to consider the malarial element as a complication.

In the consideration given this subject, the writer has drawn his conclusions from his field of observation.

The discussion of the second question presents difficulties which to my mind prevent a thoroughly honest and yet decisive answer. These difficulties are recognised the moment we begin the search as regards the cause of any given case of typhoid fever. The writer admits the existence of a germ as the originating cause of typhoid fever, and this germ has,

from the descriptions of different observers, an uniformity. The question with which we are concerned is as regards the possibility of the disease originating independently of an organism derived from a preëxistent case, but by an organism capable of living independently of the human body.

I shall limit myself to the grosser side of the case, as the question of the nature of the organism is to be considered next, only stating that the result of the study of this organism has been, in the hands of different observers, not inconsistent with the idea of an existence outside of the body. These difficulties to which I have alluded are not met with on the positive side of the question, *i. e.*, Does the disease arise from a preëxisting case?

Instances can be found to satisfy any intelligent mind in this respect. But when we come to ask ourselves, Does it always do so? we encounter trouble. The writer has had an opportunity to investigate the origin of several outbreaks of typhoid fever in different institutions. These investigations were made at a time preceding the knowledge of the germ. Yet in three cases out of four he had to be content to say that no known case had introduced the germs of the disease. At Princeton college the first cases sickened were those boarding at a house whose well-water was proven to be contaminated by sewage from the house. Those first taken sick communicated the disease to the others through the conditions of sewerage and the undisinfected condition of the discharges. At an institution at Jamesbury, New Jersey, an investigation failed to prove a previous case, though there was abundant evidence of sewage-contamination of the drinking-water, as the result of chemical analysis. The medical investigation was made by Dr. E. M. Hunt, of the State Board of Health of New Jersey. The first boy to be taken sick, moreover, was one who had been in confinement. Again: In an investigation as regards the origin of an outbreak at the Deaf and Dumb Asylum, which had been traced to the probable use of a well on the grounds, within thirty feet of which a drain ran from the hospital of the institution,

a thorough overhauling of the drain for thirty feet on either side of the well failed to show any evidence of such contamination. Moreover, a chemical analysis did not disclose positive evidence of sewage-contamination. Yet the evidence pointed so strongly against the well that the writer suggested the use of chloride of lithium,—one ounce dissolved in three gallons of water,—to disclose the trouble. The hospital was 500 feet from the well. Dr. Waller, then chemist of the New York health department, made spectroscopic analysis of the water from the well before and after the lithium solution had been poured into the hospital drain. Before such procedure no lithium was present; afterward, it existed for six hours. The authorities were unable to point out the case by which the disease had been first introduced.

The following illustration, however, will show the weak point in each of these instances as supposedly demonstrative that typhoid fever originates from a germ developed or growing in water thus contaminated with sewage, independent of a preëxisting case. The writer had at one of his clinics a peddler afflicted with typhoid fever. To the inquiry as to what he had done with himself during the first week of his sickness, at which time he was having, according to his account, six or seven passages from his bowels daily, he replied that he had kept about his work, and had used the conveniences of any tenement-house or other place at which he might be. From his story, he could have deposited the germs of typhoid fever in forty places, and yet unknown to the inmates of any of them. Hence, no case arising in a large city, or in an institution which may be visited by other than the inmates, can ever be cited as a proof of the spontaneous origin of typhoid fever. But the avenues through which attacks of typhoid fever have been known to be, or may be, introduced, as by water-supply, by milk, by vegetables, fruit, ice, and by meat also, possibly, render it impossible to decide this question, except in such instances as where a thorough investigation can be made as regards each of these possible sources, not only at the time of the inquiry, but also for a time dating

back to a month at least prior to the time of illness of the person affected, or first affected if it concerns a group of cases. This, however, would not thoroughly cover the ground, for it may be possible that the germ of typhoid has escaped in the evacuations of some person, and maintained a continued existence or development for an indefinite length of time, again causing the disease in its new victim when gaining entrance. But the writer knows no instance of such a rigid examination having been made that it can be said with absolute certainty the typhoid fever must have originated *de novo*. The nearest approach to this is in the case cited by Hutchinson in Pepper's "System of Medicine" concerning a case of typhoid fever on Norfolk island in the Pacific ocean. In that instance, though it was known that there had been no typhoid fever for fifteen months, yet a man was said to have died with the disease three years before. Moreover, the invalid only arrived from England three months before sickness, and no statement is made as regards the arrival of others before or after. This last statement destroys the force of the case for absolute proof of independent origin. For to originate *de novo* conveys to my mind the idea that neither the immediate germ, nor any of its remote ancestors, had proceeded from a case of typhoid fever; in other words, that the germ can exist entirely independently, not only of typhoid fever, but also may never in any of its remote relationships have caused the disease. The proof of this is not to be obtained.

In my opinion, the undoubted existence of abortive typhoid fever adds a very large element of doubt in the search after a satisfactory solution of this matter. I have long entertained the possibility of a spontaneous origin, but cannot admit that the cases I have seen, or those which have been communicated to me, or those of which I have read, prove it beyond a doubt.

QUESTION III.

WHAT PART IS PLAYED BY MICRO-ORGANIC FERMENTS IN THE CAUSATION OF ENTERIC FEVER?

Discussed by HERMANN M. BIGGS, M. D., of New York County.

The determination of the influence that micro-organisms have in the production of typhoid fever is a somewhat more difficult problem than that presented in the case of many other infectious diseases. This difficulty arises from the fact that we have to deal with a disease that affects only the human being; and the possibility of its transmission to any of the lower animals is, at least, exceedingly questionable. For this reason one of the most important links is wanting in the chain of evidence necessary for absolute proof of the causal relation between any micro-organism and this disease. Indisputable proof cannot be adduced, as is possible, for instance, in the case of tuberculosis, because typhoid fever has not yet been produced in animals by inoculation with cultures of the typhoid germ. However, there can be no reasonable doubt that typhoid fever belongs to the class of infectious diseases, and is produced by a specific and peculiar organism.

The facts in the epidemiology and clinical history of typhoid fever that argue strongly for its infectious nature do not concern us here. Only the direct evidence bearing upon the causal relation of a special organism to the disease will be considered.

Eberth, Klebs, and Koch have all described the presence of peculiar short bacilli in Peyer's patches, the mesenteric glands, and the spleen, in cases of typhoid fever. Meyer and Gaffky later confirmed the results obtained by Eberth and Koch. The bacilli are found in the diseased portions of the

intestines, in the mesenteric glands, in the liver, spleen, and kidney. They are not found in these situations uniformly distributed through the tissue, but always in the form of small isolated colonies. This renders the determination of the presence of bacilli by microscopical examination extremely difficult. After the examination of many sections, only here and there a colony is found; and recent investigations seem to make it probable that these colonies have resulted, in part at least, from post-mortem multiplication of single organisms. The bacilli occur as short, thick rods $\frac{1}{2}$ to 1 micro-millimetre in width and 2 to 3 μ in length. The ends are clearly rounded, and not infrequently in the rods are found sharply refracting spores.

In twenty-eight autopsies on cases of typhoid fever, Gaffky found this bacillus present in twenty-six cases, either in the liver, spleen, mesenteric glands, or kidneys, or in all of these organs. In one of the two cases in which no bacilli were found, death occurred from perforation and peritonitis at the end of the fourth week, when the ulcers in the intestines had almost completely healed, so that their absence in this case affords no evidence against their constant presence during the height of the disease. In the second case the bacilli were found in large numbers in the intestinal mucous membrane around the ulcers, but in none of the other organs. It does not seem strange that the bacilli were not found in other organs in one case out of twenty-eight, when we recall the method of their occurrence and distribution, *i. e.*, in the form of colonies, not numerous, and only demonstrable here and there after the examination of many sections.

Gaffky first obtained these bacilli in pure culture in gelatine from the organs of typhoid fever cases. In thirteen cases the minutest portion of the spleen, when removed from the interior of the organ with due precaution and transferred to gelatine, gave pure cultures of the typhoid bacillus in every case. The culture experiments showed that in those cases, when only with great difficulty a few colonies were found microscopically, the inoculation of culture plates with the

minutest portions of the interior of the spleen and mesenteric glands resulted in the production of large numbers of colonies, so that more reliable information of the presence and of the number and extent of distribution of the organism may be obtained in this way than by microscopical examination.

Since the results of the investigations of Meyer and Gaffky were reported, numberless observations have been made by other observers in various countries with invariable results, *i. e.*, the attainment of pure cultures of the typhoid bacillus in all cases of uncomplicated typhoid fever from inoculations from the spleen or mesenteric glands. I have obtained such cultures without difficulty in my own observations.

Microscopiçally it is found, as is also shown by culture tests, that these bacilli are the only organisms present in the mesenteric glands, spleen, liver, and kidneys in uncomplicated cases of the disease. We may have in addition, however, in cases of septic infection in typhoid fever, the presence of septic organisms in these organs. In Peyer's patches and in the mucous membrane surrounding the ulcers in the intestines, there are also occasionally other organisms present in the form either of micrococci or slender rod-bacilli. These germs are probably septic organisms that have made their way from the intestinal contents into the tissues, as the result of the depressed vitality produced by the inflammation and ulceration characteristic of the disease. Inasmuch as the same argument could be urged with equal force against any significance being attached to the presence of the typhoid bacilli in the intestinal lesions, therefore these tissues have not been taken into consideration in examinations for the baccilli. Importance has been attached only to the presence of the germs in organs such as the liver, spleen, kidneys, and mesenteric glands, that are sufficiently far removed from the source of local infection to be freed from this danger.

As regards inoculation of the lower animals with cultures of this germ, as has been intimated already, it remains yet to be proven that any species of the lower animals is sus-

ceptible to this disease. Experiments have been made by Gaffky upon rabbits, guinea pigs, rats, calves, and monkeys, by feeding them with typhoid stools, and by introduction of the cultures through inhalation and sub-cutaneous and intravenous injections. These experiments were in part carried on with a simultaneous administration of some medicinal remedies such as would produce a disturbance of the alimentary canal. The results throughout, however, have been negative.

Inoculation experiments have also recently been conducted by the most varied methods by Baumgarten, Beumer and Peiper, A. Fränkel, E. Fränkel and Simmonds, Rietsch, and many others. The conclusions arrived at by the different investigators have been far from harmonious.

In the experiments upon rabbits made by Fränkel and Simmonds, where potato cultures, suspended in water, were injected into a vein of the ear, nineteen out of thirty-two animals died. Twenty-seven out of thirty-one house mice and one of three guinea pigs died after intra-peritonaeal injections of fluid cultures. The animals thus infected for the most part died the first day; none lived longer than the fourth day. The symptoms produced were lessened reaction to irritation, slowness of movement, loss of appetite, and, in many cases, diarrhoeal discharges. At the autopsies of those that died, the lesions constantly found were a large, soft spleen, and swelling, with medullary infiltration, of the solitary follicles, Peyer's patches, and the mesenteric glands. Sometimes there were also parenchymatous degenerations of the liver and kidney, swelling of the axillary glands, haemorrhage into the serous membrane, and hyperaemia with haemorrhages into certain portions of the intestines. There were no local inflammatory lesions. In the spleen, liver, kidney, mesenteric glands, and Peyer's patches the bacilli were constantly found. In the blood and the urine of the mice they were sometimes found. The number of the organisms, however, bore no relation to the severity of the gross lesions.

These experimenters conclude, as the results of their investigation, that they have succeeded in reproducing typhoid

fever in animals by the inoculation of pure cultures of the bacilli.

Di Vestea, A. Fränkel, and Seitz have obtained nearly the same results as E. Fränkel and Simmonds. In Di Vestea's experiments the pathological lesions were less constant and less characteristic than in the observations of the latter experimenters. He was able, however, to obtain cultures of the germs from the blood and organs of the infected animals as long as nine days after the inoculation. From this fact he concludes that the germs multiply in the animal organism. Seitz introduced pure cultures of the typhoid bacillus into the intestines of guinea pigs according to Koch's method, and caused death after from forty-eight hours to four days, with lesions of an acute enteritis. The stools contained the bacillus, but only rarely was it found in the blood or internal organs. Death with the same lesions was also produced by the intra-peritonaeal injection of sterilised cultures.

Beumer and Peiper arrived at practically the same results in their experiments as the former observers, but drew different conclusions from their experiments. They assume that the symptoms and lesions produced are not those of a specific typhoid process, but are those of a non-specific affection, possessing more the character of an intoxication. Sirotinin has arrived at the same conclusion, and declares that he has produced death, accompanied by the same lesions, by injections of sterilised cultures of the typhoid bacillus.

Without entering into any careful analysis of the experiments and results obtained by these different observers (which is precluded by the limited time at our disposal), it may certainly be affirmed that the disease produced in animals by the inoculation of typhoid bacilli is not similar to that disease as it occurs in the human being, because,—

1. The induced disease terminates rapidly in the course of from twenty-four hours to four days, with the symptoms rather of an acute poisoning.

2. Nearly the same symptoms, followed by death with practically the same lesions, may be produced, not only by

inoculations with sterilised cultures of the typhoid bacillus, but also by inoculations with cultures of other non-pathogenic earth- or water-bacilli.

3. Inoculations with small, or even with considerable, amounts of cultures of the typhoid bacillus produce no symptoms, or only very transient ones: only when large quantities are employed do marked symptoms follow the inoculations, and then the severity of the symptoms is almost directly proportionate to the size of the dose of bacilli.

4. The observations go to show that the bacilli do not multiply in the animal organism, but like all non-pathogenic germs, are rapidly and completely destroyed when introduced into the living organism.

As regards the occurrence of the bacilli under other conditions, it remains only to be said that they have been found in the stools of typhoid fever patients by several observers; and several instances have been reported when they have been found in a contaminated water-supply which has been the source of an outbreak of typhoid fever. In no other forms of disease have they been demonstrated, and under no other conditions have they been found.

We may sum up the evidence, then, as to the relation of the typhoid bacillus to typhoid fever, in a few words: There is invariably found in the spleen, mesenteric glands, and Peyer's patches, and sometimes in the liver and kidneys, of cases of typhoid fever, a peculiar, short, thick bacillus. This is the only organism found in uncomplicated cases of this disease in the internal organs, and it is never found in any other condition of health or disease. All experiments thus far to produce this disease in the lower animals have been unsuccessful, when either the typhoid stools have been used, or the cultures of the typhoid bacillus. The bacillus is present in the stools of typhoid fever patients, and has been found in a few instances in the water which has been the source of epidemics of the disease.

Now this micro-organism evidently has some constant relation to this disease. It is either the cause, the mere accom-

paniment, or the result. There are no grounds for considering that it is the accompaniment or the result; but reasoning from analogy, there are the strongest grounds for believing that it is the efficient cause. If it develops because of the favorable conditions afforded by the disease, and thus is an accompaniment or result, we should find the organism under other conditions. This is not the case. Farther, there is no other infectious disease known, in which a definite micro-organism is constantly present in the diseased tissues, where such a relation exists. And in every other infectious disease where a definite organism is found constantly present in the diseased tissues, and only then, and when from the nature of the disease, as in tuberculosis, absolute proof is possible of the causal relation existing between the organism and the disease, it has been shown that the micro-organism is the specific cause of the given disease. This, I believe, is the relation existing between the so-called typhoid bacillus and typhoid fever.

QUESTION IV.

IS THERE A DISEASE OF THE LOWER ANIMALS, TRANSMISSIBLE TO MAN AS TYPHOID FEVER?

Discussed by D. E. SALMON, D. V. S., of Washington, D. C.

I feel somewhat embarrassed in attempting to answer this question, because the facts which come under my observation are necessarily of a one-sided character. I may have a certain idea of the diseases of animals, of their symptoms, and their pathology; and yet, when the question arises as to the effect which those diseases produce upon the human patient, I am almost entirely without reliable data, because the diseases of men do not come under my observation save in exceptional cases.

I supposed at first, when I was asked to answer this question, that it was the definite and clear-cut one,—"Is there *a disease* of the lower animals, transmissible to man as typhoid fever?" In corresponding with Dr. Carroll, however, I found that the idea entertained by him, if not by the medical profession generally, is not entirely a definite one; that is, when the term typhoid fever is used, the members of the profession do not necessarily understand a specific disease produced by a specific micro-organism. This, of course, widens the subject very considerably, and the question then would naturally be, "Is there a disease of men, similar to typhoid fever, which may be produced from any of the diseases of the lower animals?"

Now I speak of a specific enteric fever first. I can say positively that I have no data from which I have any reason to conclude that there is a specific disease of animals which can be communicated to man and produce a specific enteric

fever, caused by a short bacillus such as is described as characterizing enteric fever. I do not know of any disease of animals which has the pathological features characterizing typhoid fever in men. The only disorder known that has the lesions pertaining to enteric fever is the disease of hogs, known as hog-cholera. The germ of this disease, which has been sought for, seems to be identical in microscopic characteristics with the bacillus of typhoid fever, and also identical in other peculiarities, particularly in its ability to live and multiply in reasonably pure water.

The lower animals are subject to a number of diseases, such as intestinal anthrax, foot-and-mouth disease, trichinosis, rinderpest, and possibly the contagious diarrhoea which Professor Law has alluded to, which probably would produce in men a disease having lesions more or less resembling those of enteric fever, and perhaps others which would produce such symptoms, but all very different pathologically, although, with regard to rinderpest, we have no positive data as to the specific micro-organism. Trichinosis could only be produced in man by eating the flesh of a carnivorous animal having this disease, and eating it in an uncooked condition. Probably the other diseases—anthrax, rinderpest, diarrhoea, and dysentery of bovine animals—could only be communicated to men through the food. I do not know of any facts which would lead us to believe that any of the diseases could be produced in any other way. Milk is, of course, a substance very subject to contamination, and in which most of the micro-organisms live and multiply to an enormous extent. The case which has been referred to, investigated by Drs. Klein and Powers of England, in which an outbreak of scarlet fever has been ascribed to animals, is a good illustration of the way in which diseases may be traced to cows; but also demonstrates that it is not safe to reach hurried conclusions in facts of this character. Since the examinations, made by Drs. Klein and Powers, Dr. Axe has investigated this eruption on the udder of cows; and I must admit my conviction that his conclusions are correct,—that this specific eruption

on the udders of the cows had no connection with the scarlet fever supposed to be introduced by it. It seems to have been simply a case of cow-pox, which cows are subject to, and probably had no connection with the scarlet fever in people. Although Klein has given these as the results of his observation of scarlet fever in cows, the observations of Dr. Axe tend to show that a number of persons contracted vaccinia from milking these cows, and had the characteristic pustules.

There is another class of disease, caused by ptomaine poisoning, which probably resembles considerably typhoid fever, or, at least, which produces a fever which might be mistaken for typhoid fever. I think that the cases that have been referred to by European investigators, where it was supposed typhoid fever was produced by eating flesh of bovine animals, were probably simply cases of ptomaine poisoning from decomposition of the food before it was cooked. In this case the germs might have nothing to do with the disease. We know that a very large number of micro-organisms produce ptomaines, and these ptomaines produce symptoms similar to those of infectious diseases.

I would say, therefore, on this subject, that I do not know of any facts which would lead me to conclude that there is any specific disease of animals which would produce specific enteric fever in people, but that there are certain diseases the ptomaines of which would undoubtedly produce symptoms similar to those of enteric fever.

This is all I have to say as a veterinarian. There is, however, another word I would like to say as a bacteriologist. In regard to the prevention and treatment of this class of disease, I have been satisfied for some years that the immunity produced by these diseases was caused by the ptomaines formed. I was a long time demonstrating this theory; others claim to have determined it before me. In experimenting with hog-cholera, I have been able to produce a complete immunity. Pigeons are quite susceptible to the virus of this disease, especially in cold weather. Nearly all the pigeons inoculated with three or four cubic centimeters have died within from

one day to a week; those which died within a day probably were killed by the ptomaine. By using a culture-fluid which has been sterilised by heat, we have been able to make pigeons so immune that this quantity of virus has no effect upon them; and this not in exceptional cases. Perhaps in twenty pigeons we would not have a single failure to secure such immunity. I have felt that here we have a complete demonstration of this theory.

Practically, in attempting to produce this immunity in hogs, we have not succeeded very well. A pigeon requires two doses of a quarter of a drachm each to render it immune, which is, considering the size of the animal, a very considerable dose. We have given pigs hypodermically fifty cubic centimeters,—six or seven ounces,—without producing any appreciable immunity. Undoubtedly, they would require two or three times that dose. It seems to me that we shall in the future be able to separate these specific ptomaines, and by using these we shall be able to produce a degree of immunity equal to that produced by one attack of the disease. The only way in which we have been able to produce immunity by ptomaines so far has been by hypodermic injections; we do not succeed when introducing them into the stomach.

This seems to be the line of investigation which promises the greatest results in the bacteriological field. If immunity be caused by these ptomaines, it seems to follow as a matter of course that a germ cannot produce disease except by the ptomaine which it manufactures, and which lowers the powers of the body; consequently, in a treatment based upon this view, we might hope for success if we understood the ptomaines, and were able to counteract them by a chemical agent which would have an opposite physiological effect, or would neutralise them in the fluids of the body.

I wish to say, in closing, that I did not accept the invitation to speak upon this question to-day because I thought I could add very much to the knowledge that would be brought here, but, rather, because I felt that there ought to be more fellowship and sympathy between my profession and yours.

We should each gain very much if we could work more in coöperation, if we could bring our results together and compare them, and if we assisted each other more in our duties. I have sometimes found, in my endeavors to carry on the sanitary work in which I am employed, that those who opposed me most bitterly were men who were themselves engaged in sanitary work for the protection of human health. For instance, last winter an endeavor was made to get an appropriation for experiments upon certain contagious diseases of cattle, which obviously have an important bearing upon the health of the community, because the milk of these animals goes into consumption. For these reasons it seemed to me that the investigation was a most important one to the sanitarians of the country; and yet, because we did not understand each other,—because we, perhaps, thought we were not working in analogous or parallel lines,—at any rate, because there was not the sympathy there should have been,—my part of the work has been much retarded. I feel that in the future this will not be so. I feel that hereafter we shall find ourselves working harmoniously.

Gentlemen, I thank you for your attention.

QUESTION V.

WHAT MEDIA OF CAUSATION OR TRANSMISSION OF TYPHOID FEVER ARE TO BE GUARDED AGAINST IN PUBLIC OR PRIVATE SANITATION?

Discussed by

CHARLES A. LEALE, M. D., of New York County.
EVERARD D. FERGUSON, M. D., of Rensselaer County.

DR. CHARLES A. LEALE.

In accepting the opinion of the majority of the students of bacteriology, we are drawn to the conclusion that typhoid fever is due to a special cause; that this cause, under different circumstances, may induce a somewhat varying train of symptoms, yet nearly always gives rise to certain definite conditions; that this cause is a morbid material known as the typhoid bacillus, a micro-organism found in the intestinal excretions of those affected; that the tolerance of these micro-organisms in the body, and therefore the duration of the disease, may be said to be self-limited; and that the cause of the disease multiplies greatly, and is discharged in the media of intestinal mucus and eliminations from the gastro intestinal canal, where it may either be destroyed, or, if brought in contact with the mucous membrane of the alimentary canal of susceptible human beings, may reproduce the disease.

Typhoid fever is now generally recognised as one of the preventable diseases of the human family, but it continues its devastating march, and in some of the most beautifully situated villages and towns of our state it seems to recur as often as the returning seasons of the year.

During the past year I have had in my private practice illustrations of young people who in their travels for health had contracted typhoid fever at different health resorts; and I think that in each instance I could attribute the cause of their susceptibility to the disease to either their debilitated condition before starting, or to unusual exposure and chilling of the abdomen on cold nights while on the journey, rather than to the change of diet. One young lady, who had been under my observation from infancy, after a rather fatiguing season, was sent South to recuperate. She went to the most salubrious resorts of South Carolina and Florida, where she alone, of a large party, contracted typhoid fever of unusual virulence, only to recover after several months of slow convalescence. Four years ago I saw, in consultation with the family physician, a group of three cases of very severe typhoid fever,—mother, daughter, and son,—all of whom were well when starting off for their summer vacation, but who had rooms in a fashionable hotel where the drainage was subsequently found to be very defective. They had left an elegant sanitary home, in perfect health, for recreation.

For a period of over five years I did my utmost to guard against the disease, when I thought that a family under my care was exposed to more than the usual danger of contracting typhoid fever from the exposure to heat and moisture of the polluted and frequently excavated soil on Fifth avenue, near Central park, which was the immediate cause of much severe illness and several deaths among the families of near neighbors. I had the plumbing and sewerage improved as much as possible, and the house kept properly ventilated and heated by open-grate wood fires. Great attention was paid to all the food-supply, and I had all the potable water used by the family boiled, then cooled in closed, clean earthen or glass vessels, which were surrounded by ice, thus preventing the drinking of any unboiled Croton water or melted ice water. There were twelve in the household—wife, husband, six children under thirteen years of age, and four adult servants. All of these escaped with the exception of one child,

aged seven years, who had a most malignant attack of typhoid fever, followed by many sequelae, delirium for over two weeks, double purulent otorrhoea with perforations of each membrane, absolute deafness for three months; all to be followed by complete restoration of health and hearing in one year. Strict quarantine and hygienic rules were observed, and not one of the remaining eleven was in any way affected.

Quite recently investigations have been made respecting the genesis of typhoid fever as it appears in southern Africa, where the young of horned cattle often die from a specific enteritis which post-mortem examinations reveal to be due to intestinal lesions resembling those of typhoid fever. It is well known that in most new countries very little attention is paid to either public or private sanitation, and we may readily understand why typhoid fever would thus continue where not only the excretions of these animals are brought directly in contact with the usual articles of diet, but where the drinking-water may become so easily contaminated by direct pollution. When we consider this problem, we must remember the fact that wherever man settles, and it is possible, the first sources of profit and food are the neat cattle; and the young settler therefore secures a cow as soon as the roof of his log cabin or hut denotes a permanent settlement. In the light of our present knowledge, would it not be better to direct the farmer in regard to the absolute necessity of observing the usual sanitary rules for his family, and also for all the dumb animals under his care? I firmly believe that most of the epidemics of typhoid fever may be directly attributed to the neglect of public or private sanitation. The enslaved cow, confined within a small enclosure where only grass or clover is permitted to grow, and where she can take but little exercise, is placed under entirely different conditions from her wild sister, permitted to roam over hill and dale, and to select her diet or medicine from all the indigenous vegetation. As this subject is of such vital importance to our agriculturists, and indirectly to all of the human family eating the meat of neat cattle or drinking their milk, I ask

your indulgence for a few minutes while I present to you the results of the extensive experience of Dr. Alfred Carpenter, of England, a gentleman whose efforts to solve this question of great international importance entitles him to public recognition and reward.

PURIFICATION AND UTILISATION OF SEWAGE BY SURFACE IRRIGATION.

On the 6th August, 1881, as delegate from the American Medical Association to the International Medical Congress, I received an invitation from Dr. Alfred Carpenter to Duppas House, Croydon, and to inspect the Beddington sewage farm. After having been taken over the farm, and having all the methods explained, we sat down to a delightful repast, the meats and vegetables being the production of the farm. In my response for America in an after-dinner speech, I then stated that we in the United States had many places where, in my opinion, such utilisation of the sewage would prove of great sanitary and pecuniary advantage, and at the same time prevent the spread of disease; that until viewing for myself the results, I had, with many others, supposed that the use of sewage in this manner would surely be a cause of the spread of typhoid fever; but that after beholding the results of Dr. Carpenter's experiments, and examining critically the children at the Beddington Orphanage, and the vital statistics of the parishes of Croydon and Beddington, it was difficult not to agree with Dr. Carpenter; and I believe that many of our populous towns in America, remote from the ocean and large rivers, might be made much more healthful by adopting such means.

As Dr. Carpenter's experiments had extended over a period of twenty-one years, and his observations were made with such a regard for scientific facts, and as the importance of the questions he answers is so apparent, I may be permitted, to condense his conclusions as follows:

a. That the application of sewage continuously to land in

close proximity to dwelling-houses is not injurious to the health of the inhabitants of those houses.

b. That the judicious application of sewage to land will satisfactorily cleanse the effluent water from that land, and fit it for discharge into any ordinary stream.

c. That vegetable products from fields continuously irrigated by sewage are satisfactory articles of food for animals and man; that animals fed entirely on sewage produce are as healthy as similar animals fed on ordinary agricultural produce.

d. That "the non-infectious character of the excretions of those suffering from epidemic and infectious diseases when distributed upon a sewage farm" is proved by the fact that there have been occasional outbreaks of infectious diseases in Croydon during the past ten years, including two epidemics of small-pox, several outbreaks of scarlet fever, occasional cases of diphtheria, and three periods of typhoid prevalence, two of which were distinctly connected with contamination of water-supply in its distribution, and a third was distributed by means of milk. In the year 1875–'76, the excreta of at least a thousand cases of enteric fever were utilised on the farm. In the majority of the cases the excreta were certainly not disinfected, and had they been capable of setting up the disease, some of the sixty-five persons at that time in the employ of the local board must have suffered from the infection. Yet Dr. Carpenter could not hear of any person suffering from the disease whose avocation brought him on to the fields, and this included some sixty or seventy other persons; indeed, that there is no history of any development of infectious disease among those employed on the farm.

Dr. Carpenter contends that this immunity will only be continued on condition that the sewage is kept near the surface of the farm, not if it be allowed to percolate too deeply into the soil, and so escape from the reach of the oxidising influences of the atmosphere and the appropriating power of the cellular tissue of plant life. Neither will it be absolute unless the excreta are brought in a fresh state to the farm.

The sewage must also be kept in motion until the organic constituents are altered.

e. That the changes which take place in sewage when kept in motion, and early brought in contact with soil and vegetable life, induce a condition which is contrary to that which is necessary for the development and spread of parasitic and zymotic diseases.

f. That sewage irrigation properly conducted in close proximity to dwelling-houses is sanitarily safe. Meadows may be left quite under water in severe frosts without any danger resulting to the crops, although the surface may be covered with ice. The utilisation continues, and a store is laid up ready for use by plant life the moment the temperature rises sufficiently for it to become assimilated by the plant; and it is an established fact that fruits and vegetables can be successfully cultivated by the aid of sewage.

g. That in consequence of the peculiar productiveness of properly managed sewage farms, it is wise political economy to encourage their formation in the neighborhood of all those towns which have an abundant water-supply.

Dr. Carpenter states that carefully considered observations showed that 7,500 tons of Croydon sewage, representing the sewage of 130 persons, might be dealt with each year by one acre of land, provided that an average amount of forty-two tons of grass were removed from that land (which he has not found difficult in obtaining), or an equal amount of roots or cabbages from each acre; also, that a rotation of crops is essential.

h. That the rain-fall and the sub-soil water should, as far as possible, be separated from the sewage, and that the utilisation of the sewage should be as near as practicable to its own water-shed.

Prof. Corfield, of London, in the discussion, said that it had been conclusively shown that to assure purification at all seasons of the year, it was necessary that the sewage should pass through the soil, and not merely over it; and that the sewage committee of the British Association had

shown that when surface action was relied on, the sewage was not purified in winter, but only when the crops were growing actively, whereas, when sewage was passed through soil, it was as completely oxidised in winter as in summer; also, where sewage was passed over two fields, and there was little or no percolation through the soil, the sewage might be more impure after it had passed over the second field than it was when it came in from the first. He added, with regard to the scare about the spread of entozoic disease, that there was no evidence at all that such diseases were spread in cattle or in men by sewage farming,—as the British Association committee had an ox, which had been fed for twenty-two months on sewage produce, slaughtered, and its carcass examined by Dr. Cobbold, Prof. John Marshall, and himself, without any trace of entozoic disease being discovered.

Dr. Carpenter stated that during the past few years there had been several outbreaks of infectious pleuro-pneumonia in the Croydon district, the infection having been brought from the metropolitan meat markets; that the cow-sheds in which the disease had arisen were drained into the Croydon sewers, through which the blood and excreta from the slaughtered animals had been washed; and that these sewers carried the morbid matter from the sheds to the farm,—but that there had been no corresponding disease among the cattle upon the farm.

According to the report of Dr. C. W. Philpot, medical officer of health of Croydon during the year 1880, with a population of 77,200, there were 2,496 births, 1,248 deaths, with zymotic deaths 184. Birth rate, 32.33. Death rate, 16.16. Zymotic rate, 2.79.

At the time of my visit to England I examined a large number of the children at the Orphanage at Beddington, and found that they were in a much better condition than the average children in orphan asylums. Their skin was free from eruptions, and the usual results of opthalmia, so frequently seen where many young children are congregated,

were not observed. In fact, all the children brought to my notice were fair representatives of good health.

The effluent water from the sewage farm, which passes to the Wandle, runs through the pleasure grounds of gentlemen, and, when I examined it, was much clearer than ordinary river water. I dipped some up in a glass, and again verified its apparent purity, but declined the invitation to take a drink, stating that the evidence presented to me in the little pond at my feet, where I saw a number of seemingly healthy and active fish swimming, was sufficient proof of its condition. I then went to the farm-yards and examined the cattle, and they all appeared to be in excellent condition. Their skin, horns, and hoofs were quite free from disease.

THE DRY-EARTH SYSTEM.

During the summer of 1871 I visited the Oneida Community in New York state for the purpose of inquiring into their sanitary condition, and on asking the questions of the leader, Dr. Noyes, Jr., if typhoid fever had appeared among them, and how they avoided it, was answered by him that they had always taken great precautions against its entrance, and also to prevent its development in the community, which then consisted of 270 persons. He called his general superintendent and requested him to let me make a thorough investigation of their living apartments. In passing around I again put the question in regard to typhoid fever, and was informed that it did not exist there. I was taken to their annex, where they had the most perfect system of earth-closets that I have ever seen. In place of water, they used an abundance of dry, sifted earth, which ran from the reservoir into each basin as readily as sand runs from one bulb to the other of an hour-glass. Their inmates were instructed to abundantly use the powdered earth on each necessary occasion. I saw the general receptacle;—it was apparently thoroughly disinfected by the earth process, which they told me worked equally well during all seasons. All the materials were finally utilised on their farm.

There are many places, even in our own state of New York, where the media of causation or transmission of typhoid fever have apparently as yet found no lurking-place. Although the medium of human intestinal excreta from a wandering, "walking" case of typhoid fever must have at some period been deposited upon the soil or in the water of these regions, yet careful inquiry of the oldest residents and physicians fails to elicit the answer of its existence.

During the summer of 1887, I was driven by Mr. Paul Smith, one of the oldest of the northern Adirondack guides and land-owners, through several miles of country, along the course of the St. Regis river, to the beautiful waters of the lake by the same name, and by a guide taken in a boat through several of the mountain lakes, visiting along their shores a number of elegant encampments where all attainable by wealth, refinement, and the observance of sanitary rules appeared to have been done to exclude zymotic diseases. I also accompanied Dr. E. L. Trudeau through a region of more than fifteen miles, over land in an opposite direction. I examined for evidences of typhoid fever, and made inquiries of many capable of giving intelligent and honest answers, and the unanimous reply was, "Typhoid fever is entirely unknown in this region." I had many opportunities to examine the soil, during dry days, and both before and after heavy rain-storms, and found that it was light and porous, through which the water rapidly percolated to great depths, while the undisturbed virgin soil was covered with the spongy accumulations of vegetable fibres, giving to it highly oxidising properties.

During the summer of 1886 my family resided at one of the most charming sanitary mountain resorts,—Lake Mohonk, in the Shewanjunk Mountains of central New York state,—and on a number of my visits I either walked or drove over many miles of the surrounding country, and could find no evidences of typhoid fever ever having become located there, nor any cause for its becoming epidemic as long as the proprietor continued his vigilant care over all sanitary affairs;

and I was pleased to see so many surrounding evidences of the benefits of culture and early scientific training beautifully applied to promote health and happiness.

If typhoid fever be due to the introduction of special micro-organisms into the system, are they not always present in the atmosphere in all places where mankind have ever lived? This is a question I have often considered during my twenty years experience in attempting to solve the problem of the aetiology of this universally distributed disease, while passing through many of its supposed typical hot-beds.

The media of causation or transmission of typhoid fever may be enumerated as follows:

The atmosphere we breathe, if containing the dried organisms, when brought in contact with the heat and moisture of the nasal and buccal mucous membranes, may be swallowed with the secretions and lodged in the gastro-intestinal canal.

Water containing the organism, drunk in its contaminated condition.

Ice taken from ponds or places in which the organisms have not been destroyed before the freezing of the water.

Food, contaminated by being handled with infected hands, or by the lodgment of flies, or by the settling of the germs from the atmosphere.

Vegetables, such as tomatoes, on the skins of which the germs may have been deposited by the manure.

Fruits may easily become contaminated by dropping into polluted matter, or by being handled by polluted hands.

Milk, either by dried organisms dropping in from the atmosphere, or by those existing in the water used to adulterate it.

Clothing, which has become polluted by the dejecta drying.

Bedding, and then when dusted or shaken, organisms thrown off in the atmosphere, and entering by mouth and nose.

Houses and ships containing the organisms on floors, walls, etc.

Flies media of conveyance by lodging on polluted objects,

the germs drying on their legs, bodies, etc., to be shaken off on moist articles of food.

Mice and other animals by becoming polluted, and carrying organisms to food, drinks, etc.

I have often thought that while the medical profession has paid so much attention to public and private sanitation in others, it has not fulfilled its duty to its own susceptible younger members, acting as internes and assistants in public institutions where the disease prevails. The records of numerous hospitals bear testimony to the deaths of many brilliant young physicians from typhoid fever; and I believe that in many instances these fatal results might have been prevented had these young, enthusiastic doctors received a daily examination from some one experienced in the predisposing symptoms, as manifested by patients before their admittance to the fever wards. Such a daily examination would give increased confidence rather than invite fear; and I would suggest that there be appointed to all large hospitals a physician for this special purpose, whose duty it should be once a day to take the temperature, count the pulse, and make at least an ordinary examination. The young, exhausted physician working all day with patients, and studying nearly all night requires and deserves attention. I may be permitted to state that I speak from personal experience and much subsequent observation,—as, after months of service in wards with hospital gangrene, followed by months in wards with the most offensive and extensively suppurating diseases, I was placed in charge of typhoid fever patients; then directly requested to take charge of a small-pox hospital; and subsequently when exhausted by shocks to the nervous system and long continued hospital work, placed on duty to superintend the dismantling of the old forts and field hospitals at the end of the war. The inevitable result followed in a severe attack of typho-malarial fever before I had reached the age of twenty-four years, from which convalescence was not complete for nearly a year.

In conclusion, I may state that public sanitation can never

take the place of private sanitation. This is my firm belief, after very extensive travel in northern and southern Europe; in America as far north as the remote settlements of Canada; in every one of the Atlantic states; down to Florida, whither I have purposely gone in search of professional information. I have ridden and driven through many ancient and charming places in old England, and in New England and in the Middle states of America, and have soliloquised, Why this deserted village—why these ruins of human habitations in such apparently salubrious positions and prosperous counties?

DR. E. D. FERGUSON.

The arrangement of the questions in this discussion implies that I am to give some consideration to the means of dissemination of typhoid fever in order to a proper consideration of prophylactic measures. Condensation will therefore be necessary. It will be taken for granted that the special cause is a *contagium vivum*. The problem would be materially simplified if absolute certainty existed, not only as to the special microbe or other agent causing the disease, but as to the life history of this agent, its method of development, favorable and unfavorable environment, etc. As the question stands, however, it is still to be studied by the inductive method, and *ex cathedra* opinions and plans cannot be accepted until the full story of the true typhoid bacillus is told.

At present there is no reasonable doubt that the poison may be received by food, air, or water. There is not evidence to justify the opinion that it finds an entrance through the cutaneous surface. It is probable that the avenue of ingress is always through the digestive apparatus, and that when the organism enters with the inspired air it becomes operative by being entangled in the upper air passages, whence it is swallowed with the food or drink, or with the natural secretions of those parts. The special substances with which the infection can gain access to the intestinal tract are no doubt quite numerous, and clinical experience has accumulated a mass of

data on this subject of incalculable value in preventive medicine. Some of the conclusions thus obtained are so well established as to require only a passing reference in this paper, while other views of the problem will require more extended consideration, either from comparative novelty, or from supposed value as contributory evidence.

Moisture with a temperature above the freezing point will be accepted by the bacteriologist and sanitarian as a necessary condition for the fruitful development of the infective agent, and doubtless the presence of organic matter, and in particular that form known as filth, is specially favorable to its multiplication. As I hope to show by a personal observation that this process of reproduction may go on at some depth below the surface of the ground, therefore the winter season, though probably checking the activity of the poison and the rapidity of its generation, does not preclude its continued life and multiplication. While it is questionable as to which means of infection, *i. e.*, through air, food, or water, is chargeable with the greatest number of cases, there can be no doubt at present that some of the most striking and readily traced epidemics have arisen through the means of the water-supply; but it is certainly rare that an effort to procure an abundant supply of pure water should result in infection, as seemed to occur at Wiesbaden in 1885. The plan adopted was to construct a tunnel into a neighboring mountain for the distance of a mile, expecting thereby to tap deep veins of water, presumably pure. To expedite the completion of the work, laborers remained in the tunnel for considerable periods of time, and it was shown that they polluted the water. Early in July the water from this new source was turned into the general water-supply, and in the latter part of the same month fever cases developed with great rapidity, so that soon over one thousand cases had been reported. An investigation led to the discovery of the pollution, and on closing the new source of water-supply a rapid abatement of the epidemic ensued.

During the autumn of 1882 and the year 1883, there

occurred an epidemic of typhoid fever in the southern portion of the village of Lansingburgh, adjoining the city of Troy. The limited area in which the cases occurred, and the fact that the contiguous territory was, and had been for a long time, free from the disease, seemed to indicate a local cause which might be detected. As nearly as could be ascertained, no case had occurred in the affected district for twenty-five years, except a single imported case seven years previous to the epidemic, and this case was of a doubtful nature.

The population within the infected area was about 300. There occurred in all twenty-three cases, of which six terminated fatally. In addition, there were a number of cases under the care of irregular practitioners, in which febrile symptoms were present; and after a prodromic stage the patient would remain in bed for a week or two, and then slowly convalesce. It was impossible to ascertain the exact number of these irregular cases, but if added to the list of twenty-three it would certainly have increased the number to over thirty. As several of the cases, some of them fatal, came under my observation, I advised Dr. J. P. Marsh, who was at that time my student, to investigate all the facts bearing on the subject, which he did, making it the subject of his graduation thesis.

The first line of investigation had reference to the well-water, in relation to the presence of organic matter, and though it was found that organic matter did exist in notable proportion, the greatest being in the Baker well, in none of the wells was the proportion as high as in the hydrant water of Troy.

The residents of the district were in comfortable circumstances, and there was no crowding. No system of sewers had been established. Where private sewers existed, they emptied into hogsheads buried in the ground on the premises. The privies had plank vaults. There was no system of public water-supply, all drinking-water being taken from wells, which were generally of the "drive" variety. The soil consisted of a surface layer of sand resting on a stratum

of coarse gravel, the gravel in turn resting on rock known as the Hudson river shale. The surface of the district involved, and, in fact, of quite a wide district contiguous thereto, was quite level, having apparently been formerly part of the river bed, though now from twelve to fifteen feet above the surface of the river.

As aerial infection would not account for the origin of the cases, nor would the food-supply do so, the suspicion remained with the water-supply, in spite of the comparatively favorable result of the analysis. It therefore occurred to us to examine, as far as we could, the conditions relating to the source of the water-supply. We found that in making the "drive-wells" it had been the custom to drive down the tube until arrested by the rock. By taking the known depth of the wells we found that there was an area of depression in the rock corresponding with the infected district, and it was farther learned that an underground stream or spring formerly issued over a ledge of rock on the river bank at what is shown on the map as the Baker house. This "spring" had been covered for several years by a dock to increase the yard area.

It was also learned that when the gas-works (shown on the map) were erected in 1876, in digging the deep pit for the gas tank the workmen encountered a formidable difficulty in a very free flow of water. The work could only progress by day and night pumping; and, in fact, this pumping was continued for several months with the result that the majority of the wells in the infected district ceased to afford water, but as soon as the tank-pit had been cemented and the pumping stopped the water-supply returned.

From these facts, no doubt could exist as to the presence of a sub-surface pool of water, which, by the "soundings" afforded in making the wells, was shown to have an extent corresponding to that indicating the infected district on the map. The western edge of this undergound "bowl" could be seen at the river bank on the Baker lot, where the dip of the rock was *from* the river, and in fact the dip was so sharp

that at the well in the house the rock surface was several feet below the out-cropping rock just west of the house. After this brief review of the topography and geology of the district, a history of the epidemic will suggest the probable line of contamination.

In April, 1882, a patient convalescing from what was reported as typhoid fever came from Schenectady to his home, which is marked as the first case on the map. In August the disease appeared in the Baker family, their house being at the river end of the sub-surface pond. From personal inspection I am prepared to state that no local source of contamination or infection existed on these premises aside from the water-supply. It is but fair to state, however, that the water-supply may have been contaminated by imperfect connections in the soil-pipe of a water-closet used mainly for slops, as any leakage would soak into the ground whence the water was drawn; but no leak was shown to exist. The privy was situated on the rock sloping *toward* the river, and was flushed from the house so as to wash the refuse directly into the river. The first case in this house was presumably of local origin, being a continuous resident. In all, five cases (with three deaths) occurred in this house, and of course it is possible that these cases made a new centre of infection in the soil, influencing thereby the water-supply of the vicinity. This could not have occurred, however, after I saw the patients (I did not see the first case), for thereafter thorough disinfection of the stools was practised.

From the first case in August, 1882, till early winter in 1883, twenty-three cases occurred, all within 100 feet of an imaginary line drawn from the house occupied by the convalescent supposed to have imported the disease, to the Baker house. There was one exception to this statement, a case residing two or three blocks east of the infected district, on Cemetery avenue; but this case rather accentuates the theory, as the patient, a school-girl, was accustomed daily to drink freely of the well-water in the infected district.

The cross-shading on the map shows the extent of the

underground bowl, as far as the "soundings" furnished data for mapping; and the fact that a stream or spring of water escaped over the ledge of rock at the river extremity of this territory was evidence that the underground current was from the locality of the imported case toward the Baker house.

By the autumn of 1883 the residents of the district began to appreciate the possible danger connected with the water; its use without boiling was quite generally discontinued; and in the following year a public water-supply was furnished. After the general discontinuance of the use of unboiled water not a new case occurred, though no public sewers were constructed till 1886, and but few houses have to the present time made connections therewith.

The evidence sustaining the theory of contamination of the water as the cause of this epidemic was carefully weighed against all other known theories, and while it is impossible to review here all the evidence, it is sufficient to state that it was the only rational explanation of the origin of the disease. It furnishes a striking evidence of the contamination of drinking-water from a comparatively remote source.

As to the initial prevention, the responsibility would lie in the failure to disinfect the stools of the imported case; but as no evidence existed that a physician was in charge, no blame could attach.

Accepting that the drinking-water was the means, in this instance, of disseminating the poison, it is another proof of the inutility of taste, smell, or chemical reagents in testing as to danger. The water was to all appearances good and potable, and contained much less organic material than the city water, which could not be charged with causing typhoid fever. Of course, any examination for the special microbe of the disease was not made, as the technique of the procedure had not then been evolved.

The epidemic at Lausen, a village in Switzerland, in 1872, has been frequently quoted as an example of the transportation of the poison by an underground current. The facts

are fully set forth in the article on typhoid fever by Dr. James H. Hutchison in the "American System of Medicine." There the communication was shown to exist through the base of a mountain, and was demonstrated by means of salt, impregnating therewith the spot whence the infection was supposed to arise.

The conjoined influence of aerial infection and water contamination was recently exemplified in the city of Troy. In common with all cities, we annually have cases of typhoid fever, the greater proportion, however, occurring in the unpaved (therefore poorer) portions of the city. In the spring of 1886, an ice gorge caused a rise in the river sufficient to inundate the southern portion of the city, thereby filling the cellars and wells with river water, and leaving behind a generally diffused stratum of surface filth and river silt. In this district, during the ensuing summer, cases of fever were unusually frequent, though the type was exceedingly mild as far as mortality was concerned. A Fellow of this Association, Dr. S. W. Lester, attended fifty-six cases, all of which recovered. It is not for me to discuss in this connection whether we now confuse different diseases under the head of typhoid fever; but in the cases referred to care was taken to exclude cases which could more properly be classed as malarial. I saw several of the patients in consultation, and the outlined general history of the fifty-six cases, as given to me by Dr. Lester, was as follows: There was ochre-like diarrhoea in fifty per cent.; ilio-caecal tenderness, gurgling, and tympanites in seventy-five per cent.; duration of the pyrexial stage, three to six weeks; marked delirium in thirty per cent.; prodromal headache and *malaise* in all; the typhoid eruption in fifty per cent.

Well-water was used by the majority; and I will say in this connection that wells for drinking purposes are still maintained in Troy at the expense of the city, there being a sufficient number of citizens who prefer the well-water, regardless of arguments against its use, to influence the city authorities to the retention and maintenence of the wells.

It is easy to understand how the high water, having some, though moderate, current, could distribute infected material over the inundated district; and as an abundance of organic refuse was present, no doubt multiplication of the infection could progress during the summer so as to render aerial infection possible, and even probable. In this instance, granted the presence of the germs at the time of the flood, no precaution could prevent their dissemination; but the avoidance of the use of well-water, with thorough scavenging and cleansing of the cellars, there can be little doubt, might have materially limited the infection. It is proper to add parenthetically, that this comparatively large number of cases without a death would furnish a basis for strong therapeutic claims if a special or novel line of treatment had been adopted. The recoveries occurred in spite of a large percentage of severe, and, in fact, quite a number of very severe, cases.

An instance of apparently pure aerial infection is related by Liebermeister in Vol. I of "Ziemssen's Cyclopaedia," where the excrement of a typhoid patient had been thrown on a dunghill, and several weeks later five persons were employed to remove the manure, of whom four were taken ill with the fever, and the fifth with gastric symptoms and an enlarged spleen. Nine months later two men completed the removal of the dunghill, and one of them sickened and died of typhoid fever.

It has seemed to me that sufficient stress has not been placed on ground air as a means of infection. When we consider, in view of Pettenkofer's experiments, the facility with which ground air can gain access to our dwellings, it only requires the assumption of favorable conditions in the soil for the generation of the poison to render it clear how infection may arise thereby. So far, the air from ordinary sewers has not been shown to be a common cause, at least among those employed therein. This does not refer, however, to defective, broken, or leaky sewers, from which soil contamination may arise, and become operative through water or aerial infection.

There seems to be a growing suspicion that our food, and

in particular the meat of animals, may be chargeable with causing the disease; but I confess the evidence is somewhat incomplete, as far as my researches extend. The principal evidence, and it certainly is worthy of considerable weight, is the epidemic near Zurich in 1878, in which 700 persons participated in a feast, and three or four days thereafter cases of illness began to occur, until soon 500 of the 700 participants in the feast had become ill, and the mortality exceeded 100. The only common cause seemed to have been some veal from one or more diseased animals. Some people not at the feast, but who partook of this veal, became ill. Autopsies in the fatal cases showed what were believed to be the special lesions of typhoid fever. Of course, in this as in many other phenomena, unrecognised causes may have been more important than those detected, but the history of the investigation shows that reasonable care was taken to avoid error.

The more or less constant existence of the poison in many communities without the occurrence of continuous or even frequent cases of the disease is not an illogical assumption, when we take into consideration our limited knowledge of the special conditions under which the organism becomes virulent, as well as the varying susceptibility of different persons, and even of the same person at different times. By this means we can account for the recurrence of cases in isolated hamlets or houses, where there is no evidence of recent importation of the infection, and where some time previously (and why not several years?) the disease had existed. If we do not so conclude, we must accept a somewhat frequent spontaneous origin, which is hardly reconcilable with the belief in a specific organic cause. If such should prove to be the truth, *i. e.*, that the poison may live for a long time in the soil, or in connection with organic matter such as the amount and kind of filth at present inseparable from domestic and agricultural affairs, it does not seem probable that we can entirely eradicate the cause of the disease. It is to be hoped that we may yet remove individual susceptibility by a process of inoculation or other measures;

but in the absence of such means at present, and as the millennium of cleanliness is apparently a remote even if not an impossible state of affairs, and therefore as the soil favorable to the development of the typhoid germs will probably continue to exist, the continuance of the disease is to be anticipated.

A thorough familiarity, however, with the conditions favoring the development and transmission of the germs will enable us frequently to strangle an epidemic at the outset, and thus by preventive measures to accomplish much more in the way of saving life than we can now hope to do by means of the therapeutical management of cases. If, as is assumed, typhoid fever is due to a special micro-organism, and is transmissible by certain recognised channels, then every case seen by a physician must be regarded as an index of the danger to which others are exposed, and as a possible source of further dissemination. With this view of the matter in our minds, the responsibility resting on the attendant becomes very great. Most if not all of us are convinced that such is the truth of the matter; but the practical trouble is, that we are convinced before we believe,—*i. e.*, the conviction must become so perfect as to almost unconsciously influence our conduct before it bears fruit in the works which mark a complete faith. No surgeon can be aseptic in his work who does not, without thought, as it were, avoid the source of contamination, or use the corrective where possible contamination exists.

This much by way of preface; and now in a few words I will deliver the sermon I find appropriate to my text.

In the line of general preventive measures, we should so construct the cellars of our houses as to exclude the ground air, or at least afford an opportunity for ample ventilation, that the living-rooms may not be contaminated. We should remove from our dwellings in some thorough and efficient way all kinds of filth. (The plumber may tell you how, and sometimes help you *not* to do it.) Good paving of the streets of densely populated districts is probably not sufficiently

appreciated as a sanitary measure in the protection afforded against soil soakage. The efficient removal and safe disposal of garbage is a problem of great importance, the settlement of which often depends upon conditions over which we can have little control; but whether the place be out in the sea, on the land as a fertiliser, or in an oven for destruction, are questions which must be settled by local conditions. There is one way which may be forbidden, although frequently adopted, *i. e.*, the making of a garbage subsoil for our building lots. We should preach the doctrine of municipal, domestic, and personal cleanliness, realising, however, that it is easier to preach than to practise, and that we are often only in a slight degree responsible for our environment.

I cannot give directions for procuring a supply of pure water, but it is usually a solvable problem. The selection and *protection* of the water-supply for towns and cities are questions of vital importance, and it has always seemed to me that the supply for household purposes should be ample, and furnished to all free of charge, being supported by a general tax.

There remain a few points concerning which I should and wish to be specific. We accept a *contagium vivum* as the cause of the disease; we believe it finds a place of infection and multiplication in the intestinal tract; that it escapes from the body in the alvine discharges; and that it may be received into the body with air, water, or food. Whether after the escape of the bacillus from the body of the patient it undergoes a development, or only a multiplication, is not specially important, as the clinical fact is undisputed that mere contact with the patient or the presence of the recent stools does not communicate the disease,—*i. e.*, it is not contagious, or very rarely so. Against aerial infection we cannot always furnish adequate protective measures, but the facts now known relative to the vitality of micro-organisms enable us to speak with a fair degree of positiveness concerning some measures of prophylaxis. It is well for us to bear in

mind the distinction between deodorisers, antiseptics, and disinfectants, for the latter are the most important.

Prolonged cold by freezing was recently shown by Dr. Prudden to fail in killing the typhoid bacillus: hence the cold of ice is not a reliable disinfectant. Heat, efficiently applied, is reliable, though it is found that a much higher temperature is necessary when applied to desiccated bacteria. The fact that a comparatively moderate degree of heat will destroy these organisms, and that moderately protracted boiling will destroy their spores, should be fully understood, and I believe it to be substantially the truth. Recent experiments of Dr. George M. Sternberg on "the thermal death-point of pathogenic organisms" seem to demonstrate that the typhoid bacillus is destroyed by exposure in a moist state to a temperature of 133° F. for a period of ten minutes. It is easy to exceed this requirement by boiling the articles removed from the patient for an hour, and thereby also destroy the spores, if such may exist. For the excreta, privy vaults, articles of furniture, etc., which cannot properly be boiled or burned, chemical disinfection should be applied. The evacuations from the patient should be received into a disinfecting solution, and should never be thrown into the water-closet or on the ground until a short time has elapsed so as to allow the disinfection to take place. For this purpose the bichloride of mercury is doubtless the most efficient agent, and its high grade of activity as a germicide renders it comparatively inexpensive. A solution of 1 to 400 or 500 can readily be made by adding an equal proportion of muriate of ammonia to the mercury, and this solution will serve all practical purposes. From one half to one pint of that solution, if left for a short time with the contents of a bed-pan, will render it innocuous. For privy vaults the supply should be ample and probably repeated and frequent applications should be made for a day or two, bearing in mind the possibility of contaminating the well where proximity and soil may favor such a result. From two to five dollars will purchase sufficient corrosive sublimate for the disinfection of a privy vault.

Other disinfectants are left to the choice of the attending physician, as I have no time to consider them, and, in fact, regard them as inferior, unless it be a good article of chlorinated lime or soda.

If drinking-water is suspected, thorough boiling will render it harmless, while as far as articles of food are concerned, notably meal, if they be well cooked there should be no danger.

It would be gratifying if our prophylactic measures could be made absolutely efficient; but in the complexity of human interests, obligations, and limited resources, we can hardly expect to succeed as well as we could if the method and the means went hand in hand.

QUESTION VI.

WHAT ARE THE COMPLICATIONS AND SEQUELAE PROPERLY ASSOCIATED WITH TYPHOID FEVER?

QUESTION VII.

WHAT ARE THE INDICATIONS FOR TREATMENT; AND ARE RELAPSES OR UNTOWARD COMPLICATIONS FAVORED BY SOME ANTIPYRETIC MEASURES?

Discussed by CHARLES G. STOCKTON, M. D., of Erie County.

Writing in 1825, Eberle begins his valuable work on Practice with these lines: "The history of Practical Medicine consists of little else than a review of the doctrines which have successively risen and sunk again concerning the nature and treatment of fever," and his words appear to have been as prophetic of the succeeding sixty years as they were historic of the past. There seems to be, at length, good reason for believing that the pathology of fevers is being cleared up. But when we come to compare our present views with those entertained by our grandfathers, we perceive that modern pathology extends to us very little that was not offered by old pathology, or which is more than suggestive of improved treatment. That is, they knew that quinine and bark, arsenic and zinc, were able to subvert intermittents; and that mercury and quinine were of positive benefit in remittents; but when it came to continued fevers, many drugs were tried, but none attained a satisfactory reputation. And to-day we know no more about intermittents or remittents, and if we

have learned to summon fewer powerful agents to assist us in coping with continued fevers, we surely cannot claim to have found any that are positively more effectual than those in use half a century ago; for before this time (1737) Currie had taught the use of baths, and soon after the plan of "feeding fevers," so much dwelt upon by Graves in later years, was understood and practised by physicians in this country. (Flint's Practice.)

It has required the experience of all these years to mould our views into what might be called "improved modifications" of old methods, but there are no new theories of treatment, justly so named, that have gained any established position in the esteem of the practitioner. Nor do recent pathological investigations promise us more light than was had when fevers were first known to come from without; when it was known that some unwholesome factors entered the human organism through air, food, or water; and when it was known that quinine paralysed some classes of these factors, and that other classes refused to be paralysed by anything save a warfare with living tissues. For, granting the triumphs of the microscope and the culture tests, when it comes to treatment, what does it signify whether we call it vibriones or filth, bacilli or bad air? We were sure that there was something within which came from without, and which could not be destroyed by the means at hand.

Possibly it is premature to speak so slightingly of our therapeutical resources for breaking up fevers. There have always been found those willing to maintain that some measures would abort or greatly shorten typhoid. Chief among these measures were venesection, cold baths, and the administration of calomel and quinine. At present there are some who believe that external cold will abbreviate and lessen the intensity of fevers, and others who maintain that enormous doses of quinine, if given early enough in the career of the attack, will actually cut short a typhoid, and prove harmless to the patient. These views I cannot entertain. There are cases in which the pyrexia is so great that for antipyretic

purposes the cold bath or quinine may be well suited, but when it comes to breaking up the disease without breaking up the patient, I believe that our resources are entirely unavailing, recent contributions to the contrary notwithstanding. German physicians who formerly thought to abort the disease by the very early and free use of calomel, apparently now have reached the opinion which Nothnagel has voiced in a recent lecture, that "calomel seems to shorten the disease." Ziemssen has lately expressed similar views, and says,—"An abortive action of calomel, such as has been claimed by Wunderlich, has not been shown. Griesinger, then Bäumer, and, more recently, Weil, have shown that neither is the mortality lessened by calomel, nor the number of abortive cases increased." It has been for some years common practice, without expectation of aborting the disease, to administer to typhoid patients five-grain doses of quinine every four or six hours, hoping thereby to mollify the intensity of the attack. Observation teaches that this dosing has little influence upon the temperature. What, then, is the object of the medication? It is said, in reply, that the patients feel better with the quinine; that the pulse, the nervous system, and the intestinal tract behave better under its influence. Now, I will not deny that this may be true of some cases, and it will probably be found that these cases are malarial as well as typhoid subjects; but if uncomplicated cases are affected favorably by this routine treatment, such results have not been demonstrated.

The clinical thermometer not only revived the practice of Currie, but it inaugurated the reign of antipyretics in general, and of the faith that it was the temperature that destroyed, and not so much the disease behind the temperature. This faith is evidently waning; however, it has still a potent influence in directing the management, both in fever wards and in fever chambers. Nearly every one admits the peril of allowing the temperature to range from 103° to 106° F., and the propriety of using some means to lessen the body heat, if for no other reason than adding comfort to the sick

man; but it is now said, almost by common consent, that antipyretic measures do not lessen the severity nor shorten the course of the fever; which is in antagonism to the doctrine and teachings of Brandt.

Of the various methods employed for cooling the body,—the cold bath or pack, the twenty or thirty grains of quinine at a dose, the antipyrin or the antifebrin in quantities sufficient,—it may be said of all that they generally accomplish their purpose for a while; and if the temperature be so elevated as to disturb and threaten the nervous system, or the heart, they should be permitted as lesser evils than the great heat.

But if, after their use, the improvement of symptoms generally be not manifest, and the depression of the temperature be merely temporary, then antipyretic measures may better be omitted, for the vitality of structure has enough to oppose in the *materies morbi*, without having set against it also the *materia medica*. The practice of using frequent sponge baths of tepid or cold water is generally sufficient to keep the temperature within reasonable limits; moreover, this practice does not fatigue the patient, but often affords him rest and a degree of comfort not otherwise obtainable. Doubtless there are some cases in which drugs are the most beneficial antipyretics, but sponging should be tried first, and is likely to satisfy the conditions; but if not sufficient alone, if used in connection with antipyretic drugs, sponging will so assist their action that smaller and less frequent doses will prove effectual.

This method of combining the use of the sponge bath and antipyretic drugs is sometimes very unsatisfactory, and for reasons that are unknown to me. During the past few weeks I have studied a series of hospital cases that were treated according to the following rule: "If the temperature approach 103° F., use the sponge bath; if soon afterward it rise above 103° F., give twenty-five centigrammes of antifebrin." The bedside notes showed that in certain cases the temperature not only continued to rise, but rose more rapidly, after the use of the bath, but declined uniformly after the

antifebrin. Thinking that repetition of the baths at half-hourly intervals might accomplish the desired end, such an experiment was made, but the temperature was not controlled until the hour for a natural decline occurred. In order to satisfy myself on this point, two very similar cases were selected. To one was given antifebrin alone, and to the other only sponge baths were allowed. After the first twenty-four hours, the temperature in each case was well in hand, with fewer baths given to one, and less antifebrin to the other. I do not suggest that these facts are constant in typhoid fever, but I am satisfied that there is this incompatibility in a fair proportion of cases.

There are occasions when the body heat may be reduced easily by the judicious administration of opium, sometimes in small and stimulating, and at other times in larger and somewhat sedative, doses. By its use the nerve centres are rested, and the circulatory system strengthened and regulated. Reference is here made to the general and not to special uses of opium, such as checking diarrhoea or preventing haemorrhage.

Alcohol has come to be one of the most common remedies in treating fever, and while it is often indispensable, and commonly useful, it requires to be given at the right time and in the right quantity. To begin with, alcohol is usually bad practice, and to end with, alcohol is usually good. When to commence it, and how to regulate its administration with due regard for the effect upon the brain, the heart, the tongue, the skin, are frequently questions requiring a nicety of that kind of judgment which age and ripeness alone bring to mankind. As a food, alcohol is at times our sole dependence, but even as a food it should not be given with too great generosity.

It really seems that the question of feeding is one in need of critical examination at this time. The revulsion from the antiphlogistic methods has led to a practice of stuffing rather than feeding. It is not now so conspicuous as it was ten years ago, when it was thought necessary to pour milk

enriched with cream, and beef tea boiled in a bottle, down the throats of resisting and nauseated fever victims, apparently with the belief that the more nutriment the patients put out of sight the better were their chances of survival. This barbarous prodigality in feeding was often kept up faithfully even when the tortured intestinal tube evacuated the aliment undigested about as fast as it was introduced, although efforts were put forth to hold the indigestible mass where it was supposed to belong by the giving of astringent diarrhoea mixtures. While this manner of feeding, stuffing, much to the gratification of domestic economy, has subsided in considerable degree, exhibitions of it are still manifest, and it would therefore seem profitable to give the question some attention.

About the first sign of an approaching typhoid is the loss of appetite, and anorexia accompanies the malady until near the end. Now, with rare exceptions, where there exists a distaste for food there is also inability to digest and assimilate it. It is a matter of general belief that stomach digestion in all fevers is very imperfect, and it seems unreasonable to expect the intestine, which, through much of its extent, is going through a process of infiltration, sloughing, and cicatrisation, to do very much digesting. It is surprising that it performs its office as well as it does, but at best it is seriously crippled in function as well as in structure, and is incapable of more than moderate work. In view of these facts, what possible good end can be subserved by tormenting the intestine with an ever-coming burden of fermenting milk-curds and beef tea? Does not this procedure rather embarrass nature and jeopardise the patient? On this question it would seem that we must reach two conclusions. The first is, that only a limited amount of nourishment should be administered; the second is, that this should be administered in that form which makes the least work for the crippled digestive apparatus. In other words, we should give our patients small amounts of liquid food, and this, very frequently, should be peptonised; the amounts to be varied in different cases, and in dif-

ferent stages of these cases, governing ourselves not by the watch and the measure of milk, but by the effect that the feeding appears to have upon the sick one; in short, managing the administration of food by a somewhat analogous rule to that which applies in the administration of alcohol at the same time. Let us not think that because a food is partly digested it may be given in large quantities, nor that the several digested foods are alike relatively valuable to all persons, and at all stages of fever. Certain idiosyncrasies and dyscrasies continue their modifying influences when fever is present and when fever is absent. It is very doubtful if one be justified in saying that milk, peptonised, is always a suitable diet in these cases. There are doubtless those who assimilate and progress satisfactorily under the use of any of several beef preparations, and others, again, who receive with greater benefit some starchy food, either dextrinised, or reinforced with those extracts of malt which are rich in diastase. The extract of malt alone constitutes a most nutritious, and, to some, not unpalatable diet.

It is generally said that water is to be allowed in unlimited quantities. This must, of course, be construed as a figure of speech. There are some present who have heard patients express the wish that they could have a hose connecting the hydrant with the mouth; and some of us have seen patients drink water with a lavish profusion that suggested such an arrangement. I can conceive no good reason why the question of water should be left to the control of a morbid thirst, perhaps local in nature, or perhaps due to some irritation of nerve centres that may be soothed by small amounts of opium, but by no amount of fluids. On this point we have a warning from Dr. Da Costa, who teaches that an abundant but not an unlimited supply of water be permitted, for the reason that the vessels of the stomach, being constantly charged with water, will not readily take up the liquid food, the rapid absorption of which is so essential. In the middle course is the safest way.

One should never omit to insist, in speaking of the treat-

ment of typhoid fever,—first of all, a large, airy, sunny, quiet room; a well made single bed; an intelligent trained nurse, by whose foresight and tact the wants of the patient shall be anticipated, and the needs of conversation and disturbance avoided. The good nurse first and last. If need be, we can dispense with the cold bath, with antipyrin, even with the doctor; but with the faithful, ministering nurse, never.

The question, "Are relapses or other untoward symptoms favored by some antipyretic measures?" while of great importance, is not one likely to be treated with the greatest impartiality. Inquiry reveals the fact that those committed to any particular method for lowering body heat feel confident that this is unlikely to induce untoward symptoms if judiciously employed, and outside those bearing upon relapses in relation to the cold baths there is a paucity of reliable statistics on this subject. As regards the cold bath, the opinion prevails that relapses follow its employment in larger proportion than after any other mode of treatment. The proof of this is pointed out in certain hospital reports, notably those of Basle. If it be true that undoubted relapses, not confounded with mere temporary returns of fever from dietary indiscretions or other mismanagement, have been found more prone to follow the cold bath than any other plan of treatment, may this not be for the reason that hitherto the cold bath has been the most successful means of keeping the temperature low? And may it not be possible that when the temperature is kept continuously low by *any* measure, the subjects become more liable to relapses? This question can be answered only by long series of carefully recorded cases treated with antipyretic drugs, compared with those treated on the expectant plan. I am not aware that sufficient material for such comparison exists. Individual opinion of clinicians seems about equally divided on the question. Since the theory of endogenous reinfection to explain the recidive is generally accepted, it does not seem unreasonable to believe that certain antipyretics, either by their action on the bacillus or on the tissues of the body, might become factors in the restitution

of infection within the organism. That such a possibility exists as a matter of fact is not the belief of those who have had the largest experience in the use of antipyretics.

In a valuable paper read before the New York Academy of Medicine ("Medical Record," Jan. 8, 1887), Dr. Baruch discussed this question; and although he showed that for ten years, ending with 1885, there had occurred in New York city 7,712 cases and 3,184 deaths, an average of 41.28 per cent. of mortality, and for a period of about three month during the last autumn a mortality showing an average of 34.68 per cent., it was not shown, either by him or by the able gentlemen discussing his contribution, that greater mortality occurred under the antipyretic plan of treatment; nor was it found, from the scanty statistics available, that the percentage of relapses was greater when antipyrin or antifebrin was used than when the expectant plan of treatment alone was followed. As to untoward results, other than relapses, following the antipyretic treatment, much has been said during the past two years regarding the supposed bad effects of antipyrin, and, later, of antifebrin, upon the heart and other organs. General depression, with special reference to the circulatory apparatus, coldness, and profuse sweating, are said to follow, not infrequently, the use of these drugs, but it is but fair to raise the question if it be not the over-use, either as regards frequency or size of dose, that induces such depression. Clinical reports of cases from various parts of the country exhibit evidence of such dosage with antipyrin as to suggest the possible misapprehension of its true place in therapeutics. If the remarks of a recent writer, that "with antipyrin he succeeded in getting a higher death rate, but he thought the patients more comfortable," were based on an experience with cases in which the temperature was, by large doses, held near the normal point, then his observation becomes a warning against the *abuse*, but not the proper employment, of the drug.

It has been suggested that the parenchymatous changes, the granular and fatty metamorphosis of liver, kidneys, and

spleen, found at the autopsies of fever victims who had had antipyrin treatment, were the direct effects of the drug. Such views were expressed at a meeting of the New York Pathological Society last spring, but those holding these views should not forget that such lesions are characteristic of the disease, and they should be able to show that in epidemics wherein low or even sub-normal temperatures prevailed there was an absence of such changes. Doubtless such discussions are most timely, but to make them valuable the drugs should have a defence as well as a prosecution.

In conclusion, the treatment of typhoid fever narrows itself to the preservation of the individual until the fever is spent. It is a question of waste and supply, therefore a question of nutrition. In the administration of stimulants and sedatives, it should be borne in mind that the object is not to strike the assailant, but to defend the assailed. So, also, in the administration of narcotics; and when there is a temperature that threatens to destroy, we should lessen it, not by powerful means, with the hope of routing the fever, but by such measures as will least disturb the victim and most protect the nutrition, and therefore the functions, of all the organs.

ADDRESS ON MEDICINE.

By JOHN CRONYN, M. D., of Erie County.

September 29, 1887.

"As agriculture, to those who are in health, holds out the expectation of aliment, so medicine promises to the sick a recovery from disease:" thus wrote Celsus 1800 years ago, and so may it be written to-day, with this difference, that in both a more enlightened measure is used to determine their success. The *gourmand* requires his dishes delicious and many, the fulness of his desires being satisfied only in the filling of his stomach. The *gourmet*, more dainty, delicate, and capricious in his longings, makes his demands with equal assurance that he, too, will be gratified: and why not? Do we not see the hillside, the valley, and the fallow made tributary to their wants? The plough, the harrow, and the roller are to service put. The trench, the furrow, or the ditch is used, as best may accord with finest production of the food required. And when too frequent use of the once virgin soil necessitates a dressing, like an ill-conditioned ulcer, behold, at once, the fertiliser there: its fruit is forthwith seen, agriculture its promise keeps, and health moves on through aliment.

Does medicine do as well? If not, why? To give a history of the progress of medicine,—adopting the chronological order into which it is most commonly divided, viz., from the earliest records we possess to the decline of Roman literature, from this period to the revival of letters, and from the introduction of the inductive philosophy to the present time,—would no doubt, to many, be exceedingly interesting, if not profitable. It will be sufficient for my purpose, however, to but succinctly refer to a few of the characteristics of the

earliest periods, and deal more in detail with subjects nearer our own time.

Mentioning the history of the science in its earliest records, it will suffice to remark that in proportion to the progress of civilisation, greater and more active means were being constantly invented for the cure or alleviation of diseases, or for the repair of injuries to which the body is ever prone. These were directed almost entirely by the observance of such consequences as appeared from natural causes, or were due to certain kinds of food causing an elimination of such peccant substances as were supposed to produce disease. And so, too, with regard to injuries, for at this early period the value of excluding the wounded part from the air, and of the application of graduated pressure, was recognised; and these means were used to serve their purposes as now, and might be called the ancient method of antisepsis. In France, Germany, Italy, and Great Britain, men of genius and learning were not wanting who put forth theory after theory, principle upon principle, and experience surmounted by observation. Under the aegis of one or the other leader were disciples in great numbers, who in their turn lived but to upset the doctrines of their masters, and, announcing something new, to fall like the others before the tide of advancing knowledge in philosophy and inductive reasoning, coupled, however, at all times with that ever-present antagonism of opinion, begotten of hatred and envy, to be found nowhere else to the same degree as in the profession of medicine. He who may find time to consider, after the manner of the historian, the changing features of opinion and doctrine I have indicated, will discover that here and there those subjects of greatest utility as a basis of correct practice were found most prominent in the theories and speculations of this or that writer,—his reasoning, experience, and observation having always in view "the promise to the sick that their disease should be removed."

Coming to our own times, the conflicting opinions long in vogue embarrass and retard,—for, unlike every other branch

of science, our actual information does not increase at all proportionately to our experience; and, although truth is not to be attained in any science without much labor and research, yet for those willing to bestow time and attention it is for the most part attainable; or, if in the investigation it elude our grasp, the reason is manifest. In other sciences, too, when we enter upon an inquiry, or propose to ourselves any definite object of experiment or observation, we are able to say whether the result has been satisfactory, whether the end sought was reached. Not so in medicine, for there are many peculiarities necessarily connected with the subject which render it extremely difficult to appreciate the value of experiment and observation. Can anything better elucidate this than the changing doctrines and practice of olden time, to which I have before alluded, and the progressive changes due to that want of certitude, or common consent to the results of experiment, even in our own day? But a few years ago the whole medical world was divided in opinion as to whether the human constitution had undergone a complete transformation, or disease had changed its type, the bases of opinion being observation, experiment, and the experience of actual practice. The most potent agent in the therapeutics of our forefathers—bleeding—was no longer thought compatible with the cure of disease: stimulants, tonics, and food met with greatest favor in the philosophy of one party, while expectant patience, with nature's own efforts, seemed to satisfy the other. Did we have a change of type in disease, or that other transformation? Neither; but just then new light shone upon the scene: pathological inquiry solved the doubt, as much as might be for the time, and, onward in its progress to certitude, must present medicine in a more scientific phase. Certitude, thanks to workers in every part of the universe, is being eagerly sought. The laboratory, the microscope, the test-tube, find interpretation for doubt or uncertainty in hidden or obscure disease; the dog, the cat, the rabbit, and the frog are made to contribute their quota to this fast acquiring certainty; and although one can see, read, and hear, as of

old, that satisfaction is not proved to all, the dissidents but add their mite to that truth which sooner or later must prevail, when medicine shall keep its "promise to the sick."

To physiological research, more than to any other, are we indebted for some of the greatest triumphs in modern medicine,—reflex action, cerebral localisation—marvels of discovery, utility, and application. Ere long the cause of, or the organs involved in, the production of fever will have been discovered, when no longer we shall grope in the dark, nor be governed by contradictory opinions, but shall have a clear and valid elucidation of the facts observed, through our knowledge of the physiological functions invaded by that uncertain or unknown quantity called disease. Pyrexia and hyper-pyrexia will be explained by laws proven to belong to the ganglionic system of nerves in a state of pathological perturbation; and this disturbance will be accounted for by recognising the germ theory of disease, by consenting to a *casus belli* in the economy between the different tribes of bacteria (and thus prove the cogency of the Darwinian theory of the survival of the fittest), or by accepting the fact that the body, in a susceptible state from a great variety of causes, receives through air or food, or generates within itself, some septic poison that interferes with the normal function of some special ganglionic centre, which readily resents the encroachment upon its duty, and repels with force of cold and heat the direful enemy. This, and much more, physiological experiment will bring about, and make more certain and useful that actively worked field of pathological research which has for its object a more definite explanation of the origin, propagation, and mode of communication of disease. In this effort no fault can be found, though laborers are many, work so extensive, and the lines of investigation, as well as subjects, widely different—not therefore the less interesting, on the whole. The value of this ardently cultivated department of medicine would, however, be greatly enhanced if there were a better consensus of opinion among the many workers. It would be a guide of greater certitude at the bedside, where

the judgment should be without doubt, the action consequently wise, and the result satisfactory.

Notwithstanding that the data of physiological experiment indicate a great advance upon former times, being in possession of so many means of research not heretofore known, much greater results are expected of it in the future. It *must* establish the existence or non-existence of inhibitory centres, of trophic centres, of heat and other centres, of vasomotor, constrictor, dilator nerves, exercising or not the functions now attributed to them through these or other centres of the cerebro-spinal system. So, too, pathology, which has so exalted an errand to perform, will be, *must* be, cultivated with a view to establish that consensus of opinion referred to, and so much to be desired. It is not enough that the school of biologists and pathologists asserts that all communicable or contagious diseases are due to bacteria and allied organisms: it must be proved. It is not enough that great and talented cultivators in this field have labored earnestly, and mayhap honestly, to discover the true theory of pathogenesis; that they have solved the difference between spore and germ; and have given us a classification of micro-organisms that to themselves may be of easy comprehension, but, to the large proportion of practical men, of no value because not proving such micro-organisms to be the source from which disease arises. Yet how loudly is it proclaimed in the general cry for antiseptics.

Assuming that this inquiry has been rather to ascertain the multiplicity of the tribes of cocci, bacilli, bacteria, etc., than to elucidate with any useful certainty the cure or prevention of disease, is it not necessary, is it not imperative, that they shall give us laws governing their doctrines that we can utilise? Of what avail that we recognise the tubercle bacillus, the cholera microbe, *et genus omne*, if we can make no use of this knowledge to keep our promise to the sick? An innocent swelling is threatened with some malignant metabosis: has pathological analysis pointed to the therapeutics of prevention? Here is the key to what is required of path-

ological investigation,—to the end that the *materia medica* may subserve its purposes in the cure of disease, the *summa* of our calling.

Where does therapeutics stand in its relation to advancing time? The materia medica has undergone great changes; chemistry and pharmacy have altered the crudeness of the medicines of by-gone days; and pharmacology, though of recent growth, will displace empirical methods which, in all time, even to this present, have him who used them prudently most faithfully served, and supply instead the rational.

When, as we know how amyl nitrite the pangs of angina pectoris allays, so shall we know how digitalis regulates a weak and irregularly beating heart; how strychnia to the nervous system stimulus and tone doth bring; and phosphorous waste of its elements restores. Quinine,—we know it ague cures, but how? Not yet a satisfactory explanation, though guesses are innumerable. Iodide of potassium and mercury, of deobstruents most potent,—upon what principle and through what source we should positively know. The discovery of ether and chloroform might be considered chief among the evidences of advancing knowledge in this department, for as boon to man and beast no greater can be found; and so with many more. There are diseases, however, of which we learn a great deal through pathological histology, but know nothing of their appropriate medicines. This opprobrium of our art must disappear before the more accurate knowledge obtained through pharmacology, which now, like the other branches of medical science mentioned, is being cultivated with great hope of reaching a precision that will be hailed with delight by the practising physician.

Having indicated a general progress in physiology, pathology, and therapeutics, from earliest time to the present, and pointed to the urgent necessity of its continuance, I might be expected to suggest a means to the fullest possible accomplishment of our desires. It is summed up in a few words: Select from the many who would study medicine those already trained in letters and the arts collateral. Inspire them with

a deep reverence for their profession and a keen sense of its awful responsibilities; and impart to them, then, through fitted teachers, and for five long years, such knowledge of medicine as will enable them to further its highest development, so that "as agriculture, to those who are in health, holds out the expectation of aliment, medicine shall promise to the sick a recovery from disease," and keep the promise.

COLD AS A THERAPEUTIC AGENT.

By B. L. Hovey, M. D., of Monroe County.

September 29, 1887.

My subject is as old as the history of the science of medicine. During this long period of time cold has had its advocates as a means to allay pain, to arrest fevers, and to check inflammation. It, however, like other means used in the treatment of disease, has had its periods of popularity, and then again has fallen into disuse for a time. After a while, some one would bring it to the surface, and claim for it great power as a remedy to check, arrest, or cure certain maladies that afflict mankind.

This vacillation in men studying the aetiology and cure of disease continued down to 1797, when Dr. Currie, of Liverpool, revived its therapeutical use in the treatment of febrile diseases, since which time it has held its position and remained unshaken in the minds of medical men.

The claim made for it by Dr. Currie was that we did not possess any means equal to cold to reduce the temperature of the body. If his statement be correct, it certainly demands our careful consideration, to see if cold is the most potent means within our knowledge to allay this most dangerous symptom in febrile disease.

In the treatment and management of enteric or typhoid fever (and some other diseases), the most dangerous and unyielding symptom is the high temperature. As long as this continues, the patient grows worse until he succumbs. The practitioner devotes his energy and skill to subduing the heat of the body. He administers quinia, digitalis, aconite, and other medicines to control the temperature and to allay the febrile excitement. If these remedies fail to control the

temperature, the disease goes on wasting the tissues of the body, destroying the equilibrium of the nervous system, and reducing the patient to a helpless and dying state.

I do not expect to add to your knowledge in the discussion of this subject, but to bring it before you with some facts that have come under my personal observation. Neither can I nor have I time to discuss its physiological action upon the human system. This would open a great field of inquiry, involving the theory of disease, its causes, classes, pathology, etc., which cannot be reviewed in the brief time allowed me.

Cold acts as a powerful agent in changing all the secretions of the body. This is a familiar fact, and is not only known to the physician, but to all scientific observers; but why, and how, are not so readily comprehended.

Authority says that these changes are made in three different ways:

1. Through the temperature.
2. Through mechanical action.
3. Through chemical action.

It is readily seen that different degrees of temperature cause changes in all living structures, from the simplest form to the highest developed organism. The most common observer will notice this fact, for it is so universal that it is brought to the senses. The first effect of cold applied to the body is irritation, which is greater the greater the difference between the temperature of the body and the medium by which the cold is applied. This irritation is usually of short duration. As the temperature of the body and the cold agent are equalised, the increased sensibility, which was marked by redness and slight pain, subsides with the return of the normal appearance of the skin, and a pleasurable sensation arises, leaving the temperature of the part as much below its former degree of heat as the cold application affects the local circulation.

The mechanical action of cold is witnessed when applied suddenly to a person in a fainting fit, or as a cold douche to rouse a patient from a condition of stupor.

Experiments made by Schuller upon animals fully show that when cold is applied to the skin it not only influences the blood-vessels of the part to which it is applied, but also those at a distance. The distant vessels are influenced by reflex action, and there is a local reduction of temperature. He says that by applying cold to the surface we cause contraction of the blood-vessels at the point of application, and also produce a reflex action in different parts of the body. By the use of cold applied to the surface the total amount of blood in the body is not diminished, but the local quantity is reduced. This therapeutic agent then acts by relieving one part or organ from an excess of blood, and sending it to other parts that are not inflamed or congested. This is done without loss of blood to the person, and therefore with no impairment of functional activity or loss of nutrition.

Cold as a local anaesthetic in various forms has been used in all ages to allay morbid sensibility and combat inflammation. It is in the experience of every practitioner to know that ice applied to the skin produces insensibility in the part, and he also knows that it is done by checking the capillary circulation. The sensibility is reduced to that degree that minor superficial operations can be done without pain or haemorrhage. It is also well known that ice applied to a strangulated hernia not only allays the tenderness of the hernial tumor, but reduces its size, and not infrequently the gut is returned into the cavity by the use of this agent alone. Trousseau and others speak very highly of refrigeration as a local anaesthetic, and record many operations that have been performed by different surgeons with its local use.

The local employment of cold is most frequent in surgical practice; but the remedy is of great value in the treatment of sthenic diseases, as in enteric fever, scarlatina, diphtheria, pneumonia, pleurisy, peritonitis, and other local inflammatory disorders. Cold compresses are extensively used in Germany in pneumonia, pleurisy, and other pulmonic inflammations. Ziemssen, Niemeyer, and others speak highly of cold compresses in catarrhal pneumonia of children, and add that it is

rare that immediate relief is not afforded. The effect is to reduce the temperature and the frequency of the pulse, to ease the pain, and to relieve the dyspnoea.

In the use of so active an agent as cold, the practitioner should be extremely cautious in the selection of his subject and the stage of the disease. The cold bath is inadmissible in aged persons, in cases of extreme prostration, or in organic heart disease.

The methods of applying cold as an antipyretic must be left to the judgment of the practitioner. This will be governed by the disease and the effect desired. If for local inflammation, the application will be local; if for general fever, the use of the cold bath, cold affusions, or wet sheet are at his command, and are substantially equal in result. The temperature of the bath may vary, but as a general rule it should be from 65° to 70°. If the cold bath be the method used, the patient should not be kept in it more than from seven to ten minutes at a time, the bath to be repeated in two hours if the temperature rise.

The following case of typhoid fever, with complicating croupous pneumonia, was related to me: The patient was delirious at night from the first day of the sickness. The stools were characteristic of the disease. The temperature ranged from 103° to 105½° up to the fifth day, and quinia and cold sponging reduced it but one degree, though these remedies were faithfully tried. Antipyrin in ten-grain doses was no more effective, and as it produced marked depression its use was suspended. On the sixth day the temperature was 106°, and the patient was very delirious. Ice-bags were applied to the neck and abdomen, and allowed to remain two hours. After that time the patient became quiet, and slept four hours without delirium, and the temperature was reduced to 102°. A repetition of the ice was ordered if the temperature should rise above 102° F. At the end of two weeks convalescence was well established. In this case the cold appeared to change the course of the disease from a severe to a mild type.

In the treatment of typhoid fever the practitioner relies mainly upon cleanliness, good ventilation with pure air, and proper nourishment. A distinguished physician has said,—"You can no more cure a fever than you can quell a storm; but you can guide a case, as you would guide a vessel, through the danger." Cold is not a specific remedy or agent that will control the untoward symptoms of all cases; but in the exercise of judgment and skill we may direct our forces so as to guide the case to a harbor of safety. If we fail to reduce the temperature by one class of remedies, experience will direct us to others. When quinia, the remedy most relied upon, will not control the action of the heart and reduce the temperature, other means are to be applied. Cold is an agent always at hand, and, properly used, is sure to reduce the abnormal heat of the body. The methods of its use are various, and to a certain extent immaterial, as long as the application accomplishes the desired end. Cold baths, cold affusions, cold packing, cold compresses, and cold sponging are all proper, and each of use in special cases. A cold, wet sheet applied to a child with scarlatina, whose skin is hot to the touch, with a temperature of 105° and great restlessness, will be quietly borne, and rest will follow its effect. The typhoid patient will express gratitude for the almost constant use of cold sponging, and if the subject be a proper one, a cold bath at 65° F. of ten minutes' duration will reduce a temperature of 104° to 100° or 101°, and quiet rest will ensue.

In meningitis, affusions of cold water and the ice-bag have been in use from the earliest days of the science of medicine. In the first stage of acute meningitis, or the stage of excitement, the poor sufferer is tormented with pain, great restlessness and vomiting, with frequent and hard pulse, hot skin, injected eye and extreme sensitiveness to light, and irregular respiration, these symptoms soon followed by active delirium. With these conditions present, the physician's work must be quick and the best means must be selected, or his service will be of no avail. Formerly, it was the practice to apply to the shaven scalp ice and cold compresses: this, with open-

ing of the temporal artery and repeated venesection, constituted the basis of treatment in this terrible disease. Was it good treatment, or bad? I believe more patients recovered by these means than recover without them.

Sunstroke, or insolation, was a condition well known to ancient medical writers, and biblical history relates two cases, which are recorded in the second Book of Kings. This is a disease often marked by very high temperature, not infrequently 107° or 109° F. The pulse is rapid and often full. In severe cases the coma is complete, and sometimes convulsions are present. If these severe symptoms continue for any considerable time, the case will terminate fatally, or end in some of the varied sequelae peculiar to sunstroke, such as amaurosis, distressing headache, impaired intellect, or insanity.

Two theories are advanced by writers as to the pathology of sunstroke,—one, that the heated blood acts upon the nerve centres, rapidly exhausting their force; and the second, that this heated blood produces great depression of the efferent nervous system, thus preventing it from performing its function. The cause for each is alike—heated blood. Then in this, as in many other diseases, remove the cause, and the patient recovers.

Case I. A man, æt. 28, was a laborer in one of the principal hotels of Rochester. His work was in a warm room, and during one of the heated periods of the past summer he suddenly fell as in syncope, but soon became frantic and uncontrollable. His face was flushed, pupils alternately contracting and dilating, rapid and full pulse, and he complained of agonizing pain in the head. The thermometer in the axilla marked a temperature of 107° F. He was divested of his clothing, and placed in a cold bath, with ice-bags to his head. In thirty minutes his temperature was greatly reduced, and in one hour it reached 102° F. Under the use of bromide of potash he made a rapid and perfect recovery.

Case II. Miss B., in the same heated term, was employed as a cook, and her work was over a range in a confined room. Without premonitory symptoms she fell, was unconscious, and had convulsions. Her pulse was rapid and feeble, her face was flushed, irregular breathing and contracted pupil, temperature in the axilla 106° F. This case was treated by sponging the body with cold water, and ice applied to the

head. After persistent labor the symptoms improved, and the temperature gradually fell to the normal point. With the use of the bromides and rest for a few days she improved, and subsequently went into the country, and made a perfect recovery.

These two cases are given to show the powerful effect of cold in this most dangerous disease.

Cold compresses in thoracic and abdominal inflammations are agents of great value, and act promptly in reducing temperature and alleviating pain. I have already named cold compresses in the treatment of catarrhal pneumonia in children. This agent is equally applicable and effective in the treatment of adults, and may be used at a lower temperature than with children.

Dr. Flint, in his "Practice of Medicine," advises the cold compress to arrest haemorrhage of the lungs. During the past week I have treated a case of haemoptysis with great satisfaction with an ice-water compress.

Mr. K., aged 23, was taken sick with chills, followed by fever, severe colic pains at the umbilicus, nausea, thirst, tenderness on pressure, with constipation. The usual treatment gave no relief. At the end of forty-eight hours his condition was serious, and diagnosticated to be acute enteritis.

The skin was hot, pulse frequent, hard, and tense, thirst urgent, retching and nausea, scanty and high colored urine, severe pain and tympanites, temperature from 103° to 105°. Opium internally and morphia hypodermically were used up to the limit of safety, with fomentations and such other means as were thought to be indicated. On the fifth day there was no subsidence of the disease; the peritonaeum had become involved, with increased pain and tenderness. No movement of the bowels having occurred, there was fear of mechanical obstruction, either from invagination or accumulations of hardened faeces; temperature, 105°; tympanites much increased; hiccough; retention of urine. Morphia, one half grain every two to three hours, hypodermically, to allay pain. Prognosis decidedly unfavorable.

At this time an ice poultice was applied, covering the entire abdomen. Nearly immediate relief was felt by the patient; the pain grew less, the skin cooler, and there was a general expression of less suffering. He required less anodynes. The ice was continued for about twelve hours, with care to avoid freezing the skin. At about this time the bowels were moved copiously. He became quiet, slept a little, pulse less frequent, temperature 101° F.

This case was closely watched by my associate, Dr. S. C. Jones, and to him I owe many thanks for the care and skill which he exercised, and for his devotion to the patient's best interests. The direction in using the ice-poultice was not to allow the temperature to rise above 102° F. This treatment was continued until convalescence was absolutely certain. The patient made a fair recovery.

In acute gastritis, there are no means at command that will allay the intense thirst and burning pain as effectively as small bits of ice taken into the stomach, and an ice-poultice applied over the epigastrium. The same means are as potent to arrest haematemesis. We would hardly expect any physician to use hot or warm water as a therapeutic agent in either of these ailments.

As regards uterine haemorrhage, if post partum, Dr. Bedford says, with emphasis, that in perilous cases of flooding the two great and efficient remedies are pressure and cold, and that if thoroughly carried out they are perfectly trustworthy and safe. This was the teaching I had over forty years ago, and it has been my practice for more than two score years. With an ordinary practice in obstetrics for a general practitioner, I have never known these means to fail, and it has never been my unpleasant lot to see a woman die from post partum haemorrhage. I am aware that hot water is advised as a remedy in the treatment of this most urgent and perilous condition of the lying-in woman. I have never used it for post partum haemorrhage, and therefore cannot speak from personal experience. I know that young men are taught in this day by our most learned and scientific teachers to carry with them a syringe in all obstetrical cases, and if this accident occur to wash out the uterus with hot water. I do not accept or reject the teaching, inasmuch as pressure and cold have been sufficient means in my hands.

Cold water (65°), taken internally in large quantities, has the power to reduce the frequency of the pulse and the temperature. Cold water enemata have a like effect, and reduce the heat of the stomach and other abdominal organs.

Large quantities of cold water taken into the stomach act

as a diuretic. Bocker says that there is not only an increased elimination of water through the kidneys, but also of solid ingredients, especially of urea. He also remarks that the power which water possesses of favoring tissue-changes is further evinced by the fact of the increased excretion of carbonic acid gas and the increased absorption of oxygen. The sulphates and phosphates are also increased. The testimony of this high authority in connection with the evidence of others clearly shows that there is too little use of water in the treatment of disease.

The drinking of cold water acts on other functions also. It increases the peristaltic movements of the intestines, and promotes the absorption of substances by the portal system, and acts kindly on the kidneys. Dickinson, in his treatise on "Albuminuria," under the head of Nephritis, says we "must insure an abundant passage of fluid through the kidney, and avoid the use of any drug stimulating in effect to that organ." He adds that two or three pints of pure spring water, with spare diet, will often be sufficient to arrest the disease. The object of treatment is to *flush out* the tubes without stimulating the kidney. This accomplished, we get rid of the cause of congestion, and the gland will resume its normal function and rid the system of the impurities caused by the blocking of the tubes. During the past year I treated a patient illustrating this condition of the kidney, and the benefit to be derived from this simple mode of treatment.

An ordinarily healthy young man, who lived a sedentary life, habits good except that he smoked to excess, after complaining for several weeks of weakness, disinclination for exercise, loss of appetite, and a tendency to torpor of the bowels, with general loss of energy, was quite suddenly attacked with severe neuralgic pains in one of his legs. This continued at intervals for several days. It was followed by swelling of the foot and leg first, then of the whole limb. The swelling was over the course of the vessels at first, and so tender that the slightest pressure would cause severe pain. No discoloration of the skin. I diagnosed the disease as phlegmasia dolens in a man, and believed it due to some renal trouble. On examination of the urine, it was found to be scanty, from ten to twelve ounces in twenty-four hours. Amber color; sweetish

odor; reaction slightly acid; a trace of albumen; specific gravity 1000; no solids on microscopic examination. The history of the case and the neuralgic pains pointed to some renal trouble, and the examination of the urine confirmed the suspicion. The patient (with such local medication and sedative means as were absolutely required to allay his suffering) was treated in the simple manner above stated: milk diet, and at least four pints of pure water in twenty-four hours.

The result was satisfactory. In the six succeeding days, after the patient was put on this treatment, he passed 672 ounces of urine, or about five and one half gallons; the specific gravity gradually increased, and the albumen disappeared. The patient was slow in convalescing, but finally recovered his usual health. Within the past week I have examined his urine. The specific gravity is 1023, and no albumen. The leg has resumed its normal size and usefulness, and the hardening of the fascia and muscles has entirely disappeared, though it remained for about four months.

To itemise special diseases farther is unnecessary. The great value of cold water as a therapeutic agent is beyond dispute. The only questions are, When and in what class of diseases should the agent be used? And to these I should reply, In the sthenic class of disorders, at the proper age, where no organic disease exists contraindicating its sedative action.

CONCLUSIONS.

1. High temperature is an abnormal condition, and indicates disease of the circulatory or nervous systems, or acute organic disease, or all jointly.

2. As long as the temperature remains above normal, the disease continues in its course, wasting the tissues and impairing the vital forces.

3. Clinical observation and practical experience teach that the means used should be to reduce the temperature of the body to as near the normal point as possible, and with such agents as best secure that end.

4. In inflammatory fevers, heat is not the primary cause of derangement of the blood and nervous system, but is a result of some septic agent introduced into the patient, which renders the vaso-motor nervous system unable to control the heat regulating forces.

DISCUSSION.

DR. JOHN CRONYN, of Erie county, wished to call attention to the difference between sun-stroke and heat-stroke. The cases related were evidently heat-stroke. Bromide of potassium would usually save the patient in heat-stroke, but not in sun-stroke. He spoke of four cases of sun-stroke. Three that were treated with cold died; the fourth, treated in entirely the opposite direction, lived. Heat was applied to the head and cervical region, and in a few hours the patient was entirely restored to health, the heat being as great as would be borne comfortably. He thought it would be well to recollect the difference between heat-stroke and sun-stroke.

SMALL-POX IN BROOKLYN.—DEFECTIVE ISOLATION AND DEFECTIVE VACCINATION.

By Nelson L. North, M. D., of Kings County.

September 29, 1887.

Variola, the dreaded scourge of the past centuries, is by no means an obsolete disease at the present time. While it does not now, as formerly, decimate the population of great cities, it is still an unwelcome visitor, and claims for deformity or death one and another of a household all too often. Its appearance in a neighborhood, a town, or a city casts a gloom and a pall over the inhabitants. We of this age can form no adequate conception of the enormity and fatality of the malady as it formerly prevailed. In the olden time, when plagues and epidemics were thought to be "visitations from God,"—when individuals, communities, and nations in complete panic yielded to their power as a vanquished army yields to its conquerors, without an effort at defence or protection,—this disease was master of the situation.

Small-pox, among all acute diseases, was then acknowledged to be the leading cause of death. The late Prof. Flint says,—"For two centuries prior to the discovery of vaccination by the immortal Jenner, it [small-pox] ranked first among the acute affections destructive of human life."[1] Elliotson observes,—"Prior to 1800, that is, before the period when vaccination influenced the results, the deaths by small-pox were to the total deaths, both in towns and country, as sixteen to one hundred;"[2] and he quotes Dr. Haygarth as saying that he "computed that at Chester, in the latter part of the last century, one half of the deaths in children under ten

[1] "Practice of Medicine," p. 1027.

[2] "Practice," Am. ed., p. 486.

years of age was due to small-pox." "From the first report of the registrar-general of England, it appears that as late as in 1837 there were only five diseases more fatal in England than small-pox, and that the deaths throughout England and Wales by that disorder amount now (1844) annually to about 12,000."[1] From some statistics (official) from "Watson's Practice,"[2] I find that in 1,000 deaths from all causes in ten years, from 1750 to 1760, 100 were from small-pox—one in ten; and from 1760 to 1770, 108 of the 1,000 were from the same disease. Dr. Tanner states that "Variola, occurring in persons unprotected by inoculation or vaccination, is fatal on an average to one in every three attacked;"[3] and says,—"The calculation has been made by the registrar-general that the average number of deaths annually from small-pox in London during the years from 1660 to 1679 were 357 to every 100,000 inhabitants. If the death rate from small-pox were the same in London now, it would be from 18,000 to 20,000 annually."[4] Prof. Hartshorne, of Philadelphia says,—"We may mention that for thirty years before Jenner's time the average number of deaths from that disease [small-pox] every year was in Great Britain alone 80,000,"[5] and adds that "were such a mortality from it to occur now in the United States, we should lose every year about 150,000 people from this disease alone." But I am not going to weary you with statistics. I make these few quotations to fortify myself in my opening remarks. I shall be obliged to return to the figures briefly when I reach the subject of vaccination.

Dr. Bell, of the "Sanitarian," in the December number for 1886, says,—

> The small-pox was introduced in Brooklyn by a recently arrived Polish boy in June last (1886). The said boy was first discovered by a sanitary inspector, after he was convalescent, while in search of the cause of a

[1] Practice," Am. ed., p. 486.
[2] "Watson's Practice," Am. ed., 1858, p. 1162.
[3] "Practice of Medicine," (Tanner) Am. ed., 1866, p. 177.
[4] Ibid.
[5] "Household Manual of Medicine," p. 822.

second case in the same vicinity, reported June 26th. Tracing this, the inspector found the said Polish boy had arrived in a German ship, and June 1st he came from Castle Garden and took up his residence with his mother in a tenement house in North Fifth street, fourteenth ward.[1] Four days thereafter he broke out with small-pox. It was recognised by his mother, but concealed. No physician was called. The boy had never been vaccinated. The second case, which led to the discovery of the first, was the chum of a visitor to the family of the first, across an alley-way. To this first secreted case thirty-two cases have been clearly traced, twenty-four of them in the same square.

The next centre was established by a case in an expressman, about three miles distant, also secreted. No physician had been sent for until he was *in articulo mortis*. The physician found him dead, and reported accordingly. To this second centre forty-five additional cases have been traced,—seventy-nine cases to December 1st. Of the whole number, eighteen have proved fatal,—eight in and about the first centre, not one of whom had ever been vaccinated; ten in and about the second centre, nine of whom had never been vaccinated; and the one who had been was sixty-five years old, and had been vaccinated once in infancy.

Through the courtesy of my friend, Dr. John S. Young, secretary of the board of health of Brooklyn, and the valuable aid of Mr. A. T. Metcalfe, chief clerk in charge of the department of contagious diseases, I have data to show that the whole recent epidemic (it is fair to so call it) of small-pox in Brooklyn, extending over a period of more than a year, has been the result of the one concealed case (June 26, 1886) of the Polish boy from Castle Garden.

John Burns, the second case, was visiting a friend across the hall-way in the same house with the first case, and not having been vaccinated, he took the disease. He was seen by Dr. Hughes, and reported to the health office. Sanitary Inspector Dr. S. N. Fisk,[2] with a corps of vaccinators, went through the neighborhood, and while engaged in vaccinating discovered the first case; and although the work of vaccinating was thought to be very thorough, yet, from loss of time and other causes, twenty-nine cases followed in the immediate vicinity, with seven deaths, all unvaccinated. This first out-

[1] I here correct an evident mistake of the "Sanitarian" as to locality, it being N. Fifth instead of S. Fifth, and 14th instead of 13th ward.

[2] Since deceased.

break was in the fourteenth ward, a locality composed largely of a foreign population,—Irish, German, Norwegian, Polish, and Italian.

The next considerable outbreak was in the twenty-fifth ward. It started October 10, 1886, in the person of James E. Sloan (aged twenty), a colored expressman, living at 445 Decatur street. Sloan formerly lived in Ten Eyck street, sixteenth (German) ward, close by where a child 4½ years of age, at 107 Ten Eyck street, was found with unmodified small-pox, and sent to the hospital, where it died. This occurred August 20, and is considered a part of the first outbreak, as the father was employed in the sugar refinery near the locality of the first cases, and worked with members of families in which the disease prevailed, having been contracted from the Polish boy, Gomeyeski. Prompt vaccination in the Ten Eyck street vicinity prevented farther cases there, except the negro, Sloan, who had moved to Decatur street, and was a walking case, as he continued to work at his express business, delivering packages of cut clothing to German tailors and others while sick, only giving up work the day before he died. Dr. Fisk found him dying when he first visited him. From this new centre there followed in the twenty-fifth ward, and the eighteenth ward immediately adjoining, forty-nine cases, with twelve deaths during October and November. There were also during that time some cases among the German tailors in the contiguous parts of the sixteenth, nineteenth, and twenty-first wards, along Flushing avenue, Varet, and other streets of that locality. There were, beside, about that time, several cases in the thirteenth and nineteenth wards, among "first families," easily traced to the tailors and washerwomen from the infected districts. The family of one of our prominent officials suffered seriously in this way.

On Christmas day, in the tenth ward, at 160 Third avenue, a case was reported by Dr. Shroeder—Lilly Carmen, aged six years. Dr. Griffith, sanitary inspector, on investigation, found that a family by the name of Elliot, who lost two chil-

dren with variola on November 24th at 1856 Fulton street, twenty-fifth ward (previous locality), had moved into this Third avenue house three weeks before. There occurred eight cases in this house, one of which was Elliot's child, 1½ years old. (This child had been vaccinated, and recovered.) Of these eight cases, six died, one being a young married woman, eight months pregnant, miscarriage preceding death. After this there were only occasional cases up to January, 1887.

The total number of cases reported to the Department of Health during 1886, from June 26th to December 31st, were 167, of which 120 were confirmed. Eighty-five were sent to the hospital, of whom twenty-nine died. Deaths out of hospital, eight.

On January 2, 1887, around the corner from the Third avenue house lived the Mauri family. The father, as was stated, kept a third or fourth rate drug store. The family were living in filth and squalor, poorly fed and poorly clothed. Mauri was so wise that he would not be vaccinated or allow his children to be vaccinated. Suddenly the newspapers raised the cry of a new disease, or perhaps a wholesale poisoning, in the tenth ward in the Mauri family, all the members being sick but the mother. Symptoms,—vomiting, great prostration, and death in three cases in forty-eight to fifty hours. Investigation from the health department soon resulted in pronouncing it small-pox. Seven persons were attacked, and five died, including Mauri himself, who, with one of the children, died in hospital. Two or three of the children, at the urgent request of the family physician, were vaccinated a day or two before the outbreak, but of course without effect. Other than these none of the family had ever been vaccinated except the mother. She nursed them all, even following them to the small-pox hospital to do so, but she had not a symptom of the disease. A sister of Mauri, visiting them, returned to her home in New York, was attacked with small-pox, and died.

The last case occurred June 9th last. George Thompson,

colored, residing at 10 Jefferson lane, an out-of-the-way place. Isolated. The entire neighborhood was thoroughly canvassed, and everybody vaccinated. No cases reported since July 27, 1887.[1]

The health department statistics for the first six months of this year, 1887 (second six months of the epidemic), are,—

Total cases reported, 205.

Total cases confirmed, 172.

Total cases sent to hospital, 141.

Total cases died in hospital, 60.

Total cases died in city, 17.

Thirteen of the seventeen were coroner's cases, and of course concealed.

Cases quarantined by the health department, 22.

Deaths, 4.

Houses visited for vaccination during the six months, 7,893.

Families visited, 20,978.

Persons vaccinated, 8,133.

Persons found unvaccinated, 6,696.

I do not propose to say anything to-day upon the clinical history of the cases, the pathology, or the treatment; though I am clearly of the opinion that a greater advance upon the "expectant plan" along the line of the bacterial pathology, and increased germicidal efforts, by a proper administration of the chlorides, sulphides, etc., might be attended with good results. I propose only to show the defects in the present plans of isolation and of vaccination, as practised by the profession, and especially by our boards of health. In venturing to criticise our Brooklyn plan, I do so because I know more about it than I do about the plans of other cities, and not because I think our plan is the most at fault. In fact, during the occupancy of the office of health commissioner of our city by Dr. J. H. Raymond, and his energetic and able handling of the forces under his control, both in organisation

[1] To date of reading there have been four sporadic cases since July 27th,—two in 16th, one in 25th, and one in 2d wards.

and in executive management, and with the continuance of the same general plan for the preservation of health and the enforcement of hygienic laws by the present health commissioner, Dr. Otterson, and his efficient secretary, Dr. Young, to whom I am indebted for the privilege of examining the records of the health department, I think Brooklyn leads other cities in the efficiency of her Department of Health. Unfortunately, however, "politics," in our city as in others, sometimes sadly meddles with the plans of our sanitarians. With party changes come radical alterations in the management and *personnel* of the health department, and in the interim, before the new organisation and the new men get into working order, individuals take advantage of the failure of the department to enforce ordinances and rules relative to the reporting of diseases of a contagious character; and even physicians, morally weak, or willing for financial reasons to please their constituency, fail to report such cases, and, as a result, local epidemics spring up here and there, often becoming more or less general; and before the community, and particularly the health department, are aroused, many deaths are caused by preventable diseases. Observant men will certainly agree with me that this is no fancy sketch. Epidemics of variola have assumed unnecessary proportions in Brooklyn, as in other cities, in just this way.

I need attempt no argument to prove *defective isolation:* simple reference to the imperfect history of the late Brooklyn epidemic, as I have given it from the records in the health department, suffice. The Polish boy's concealed case in a tenement house, with visitors passing in and out; the workers in large sugar refineries circulating freely among numerous other workmen, and going back and forth from homes with one or more cases of small-pox therein; an expressman suffering from the disease, going from house to house delivering packages of clothing to be made up,—that clothing made up, perhaps, in the same rooms with persons lying sick with small-pox, and then delivered to clothing establishments to be exposed for sale to the general public; the washerwoman,

caring for her sick nightly, and mingling with the servants and children of our people during the day; and even the druggist, deriding and scoffing at the supposed efficacy or necessity of vaccination, dealing out medicines, and perhaps mouth washes, perfumes, or confections, with hands and clothing filthy from immediate contact with cases of unrecognised malignant small-pox in his own family,—surely these demonstrate beyond a peradventure the defective character of the isolation of variola as at present practised.

How may this state of things be remedied? First, by the passage of more exact and definite laws having reference to the control of patients with contagious diseases, as well as the universal and stringent enforcement of the laws and ordinances already in existence. The legal difficulties in the way, the "unconstitutionality" of such laws, the impossibility in a republic of controlling the individual, etc., make up, I imagine, hindrances more supposed than real. Our laws absolutely control the insane, because they endanger themselves and others: why not the subjects of dangerous contagious diseases as well, and for the same reasons?

But, in the second place, to remedy the evil, and to reach up to the passage and enforcement of proper laws, it is necessary to take better care of small-pox patients, to treat them more humanely; in a word, to banish from our midst the usual "small-pox hospital,"—a relic of barbarism,—and then banish the twin relic, the "expectant treatment" of contagious diseases; prepare comfortable places for these unfortunate people, and give them good nurses and good physicians, well enough paid that they may stay by and care for them and give them rational treatment, and not leave them to live or die, as the case may be. The records show that a greater proportion of the patients who are sent to the hospital die than of those who take their own risk, conceal themselves, and abide at home.

Then it sometimes happens that people are supposed to have small-pox, and are actually sent to these pest-houses, not having the disease, but who take it *there*, and die. This

ought not to be possible under proper regulations, and with the present knowledge of the power and efficacy of disinfectants. When we take into consideration these facts, and others of an allied nature that might be mentioned, it is no wonder that people conceal their friends having small-pox, and actually fight the law and the officers of the law that would consign such friends to the usual pest-house. It is time the medical profession made themselves felt in matters of this kind. When we insist upon better hospitals for the care of the sick with contagious diseases, upon better regulations therein as to comfort, cleanliness, care, and medical treatment, so that the patients may recover when recovery is possible, the difficulties in the case will be practically overcome, and the isolation of the sick with small-pox will be easily effected.

As to vaccination, the records given from our health board show that the plan of preventing small-pox by vaccination is seriously defective, from the fact that very many people are wholly unprotected thereby, never having been vaccinated at all. In visiting 7,893 houses, the Brooklyn officials found 6,696 persons unvaccinated, averaging nearly one unvaccinated person in every house. It is unnecessary in this presence to say a word as to the propriety, the wisdom, or the necessity of general vaccination. A few figures will suffice. I have cited Hartshorne's calculation, based upon the actual number of deaths from small-pox in England thirty years before Jenner's time, which, in the same ratio, would now, but for vaccination, cause us in the United States at least 150,000 deaths each year. He farther states that "the greatest number of deaths from it ever recorded in America was about 4,000 in 1881, in the cities of our country. Estimates of the most liberal kind of the probable number for the whole country in that year could not reach beyond 10,000 to 15,000 at most—*one tenth* of that of average years before vaccination."[1] As to pock-marked people, Hartshorne says,—"In one town in Scotland, in the years from 1728 to 1764, of an

[1] "Household Medicine," p. 822.

average population of 4,200, 3,700 were more or less marked by small-pox," which would mean, following the usual average, some 1,800 deaths from small-pox in that little town of about 4,000 inhabitants. Anti-vaccinationists are so prone to forget, or to unfairly state the case, that it may be well to quote from the report of a committee to the French Academy of Science, presented by M. Lewes. He says,[1]—

Vaccination preserves the human species from variola, but its preservative power is not absolute. Variola itself, either spontaneous or produced by inoculation, does not preserve absolutely from future attacks; therefore it is not extraordinary that vaccination should not. Thus Mead mentions having seen three variolous eruptions take place successively on the same woman. The son of Forestus was twice attacked with variola; and Dehaen states that one of his patients was attacked six times by variola with impunity, but died of a seventh invasion of the disease. Although, however, vaccination is sometimes powerless to preserve us from variola, it always diminishes the gravity of the malady. This property, which Jenner and his first successors did not even suspect, is thoroughly proved by the various facts which have been recently accumulated: In one of the most terrible epidemics of variola that has taken place in Europe since the discovery of vaccination, that of Marseilles in 1828, more than 10,000 persons were attacked. Of these 2,000 only had been vaccinated, and of that number 45 only died, whereas 1,500 of the 8,000 who had not been vaccinated were carried off by the pestilence. . . . The propriety of revaccination is now fully established. In Germany the various governments have been induced to pay great attention to revaccination, owing to the circumstances of epidemics of variola having latterly manifested themselves with a severity to which we had become quite unaccustomed since the introduction of vaccination. Revaccination has consequently been resorted to on a very extended scale, and has had the effect of arresting the epidemics. Thus, in Wurtemburg, 42,000 persons who have been revaccinated have presented only eight cases of varioloid, whereas one third of the cases of variola have latterly occurred in persons who have been revaccinated. It is principally between the ages of fourteen and thirty-five that vaccinated persons are exposed to be attacked by variola. When there is an epidemic the danger commences earlier, and children of nine years of age may be seized. Prudence, therefore, requires that under ordinary circumstances revaccination should be performed at the age of fourteen or fifteen, and four years earlier if within the radius of an epidemic of variola.

[1] "Braithwaite's Retrospect," Part xii, p. 126, *et seq.*

Dr. Stark, of England, says,—"Vaccination affords as perfect a protection from small-pox as it is possible to obtain—as perfect immunity from danger as if the person had once passed through the small-pox. This is proved by the fact that, up to the year 1800, out of upwards of 6,000 persons who were inoculated with small-pox after previous vaccination, not a single one thus took the disease."[1] There can be no doubt that the medical profession throughout the world, almost without exception, believe in and advise vaccination. It is the belief of many that if perfect vaccination and re-vaccination could be made actually universal, the highest hopes of Jenner would be realised in the entire prevention of small-pox.

Watson said, in 1857,—"For the last twenty years the Prussian army has represented an almost entirely revaccinated population. And what has been the contrast? One hundred and four annual deaths from small-pox was the last experience of the former system; two annual deaths by small-pox has been the average for the revaccinated army. Analysing, moreover, the forty fatal cases of small pox which, during the last twenty years, have occcurred in the Prussian army, we find that only four of the number were of persons who had been successfully revaccinated." Watson also quotes Mr. Marson, resident surgeon of the Small-pox and Vaccination Hospital, London, as saying,—"That not one of the nurses or servants of the hospital has had small-pox for the last twenty years. They have all been vaccinated or re vaccinated on coming to live at the hospital."

At the meeting of the International Medical Congress, recently held in Washington, an exhaustive paper on the "Preventive Power of Vaccination," by Dr. Josef Körösi, director of communal statistics, Hungary, was read, in which he discussed the subject in all its bearings, from the stand point of those who do not favor vaccination, as well as of those who do, basing his calculations upon statistics obtained by a wholly impartial mode of observation. He says,—

[1] "Braithwaite's Retrospect," Part xii, p. 128.

"Making up now the balance of vaccination, and counting its benefits on the credit and its damages on the debit side, it is found that among a population like that of the United States the vaccination would save annually 120,000 lives, while the number of children dying from cutaneous diseases, etc., caused by vaccination, might make 300, so that the balance is an extremely favorable one."[1] Dr. Körösi finished his paper with the remark that "After having now furnished direct answers on the protective power of vaccination, we might safely extinguish doubts about the blessings of Jenner's important discovery."

Personally I have good reason for believing, with Dr. Stark, that "vaccination affords as perfect immunity from danger as if the person had once passed through small-pox." During a fairly large general practice of over thirty years, including, I think, an average experience in obstetrics and children's diseases, it has been my unvarying custom to offer and urge vaccination for every child, and advise revaccination at puberty and in all cases of exposure to the disease, and also revaccination if there be danger of exposure and the time since vaccination exceed from seven to ten years. I have yet to learn of a single case of small-pox or varioloid among the families following this advice. Yet I have seen during the time two instances of small-pox following a previous attack of small-pox.

As I said of isolation, so I say of vaccination, that we have but to study the public health department records to be convinced of the defectiveness of vaccination. It is defective in that it fails to reach a large percentage of the population. It is defective through indifference and inattention of physicians; through thoughtlessness, prejudice, and carelessness of the people; through the use of impure, imperfect, and too old vaccine virus; and through the imperfect plans and operations of our health boards. Physicians appear to have yielded in a measure to the objections so often made to vaccination, and there seems a growing tendency on their part to neglect

[1] "Med. Record," Sept. 10, 1887. Report Internat. Med. Cong.

to insist upon it, forgetting, as it were, the professional obligation to use all prophylactic measures for the suppression of disease. This indifference has perhaps been increased of late, especially among the younger portion of the profession, by the advice, on the financial side of the question, recently given in a book entitled "The Physician Himself," freely endorsed by the journals, and extensively circulated during the last four or five years, in which the author says,—"Do not begin the unjust custom of vaccinating the child gratis in cases where you have officiated at its birth, as is the custom with some." It would have been much better advice, in my estimation, to have said,—Make your charges enough in all cases of childbirth to cover the vaccination. There is also too much indifference on the part of the physician as to the character of the vaccine vesicle. The mother or the nurse says the vaccination has taken, and no farther attention is paid to the case. I received such an answer in a case a year ago, but, it being my custom to examine for myself, I did so, and found a peculiar cone-shaped pustule, pronounced it unsatisfactory, and vaccinated again. The second vaccination produced a perfect pustule, which ran its full course as completely as if the operation had not previously been performed.

In this lack of attention to important details may be found the prolific cause of the supposed failure of vaccination to protect. At one time it was thought to require the test of Bryce—a revaccination on the third or fourth day in all cases. Now, in many cases, physicians do not even examine the vesicle. Indifference of physicians makes the public indifferent. People are thoughtless about all matters of preventive medicine unless advised by the family physician. But a great cause of neglect of vaccination is prejudice, most of which is altogether groundless and frivolous. Some causes of prejudice may be found, when bovine virus is used, in the severity of the sore; and when humanised virus is used, in the danger of transmitting other diseases. The inflammation may usually be kept under control by care and cleanliness,

or, perhaps better, by a return to humanised virus, one or two "removes" from the cow, with proper safeguards to prevent a possible transmission of syphilis or other disease. The danger of transmission, which was formerly so stoutly denied, is evidently not a myth, but demands the utmost care and attention, as has been abundantly proved. Jonathan Hutchinson,[1] at a meeting of a committee to investigate this subject, after detailing the cases of vaccinal syphilis, expressed his faith in vaccination in the strongest terms. He informed the committee "that the danger of vaccinal syphilis was infinitesimally small." He was of the opinion that the stringency of the law should not be relaxed, but that it should be an object of legislation to surround the operation with every possible safeguard. Among other provisions for preventing the introduction of syphilis, he would prohibit the taking of lymph from any first-born child, and recommended that it should in all cases be taken from second or later children, in families of which the elders had enjoyed a good state of health. This would reduce the probability of transmitting syphilis by vaccination to the very lowest point.

It is not improbable that vaccine virus, both bovine and humanised, may be impure, having combined therewith blood, pus, or other morbific matter, both from the time and manner of taking it. Great care should be exercised to take only the serum from the vaccine vesicle, on or about the eighth day. The present system of the production of bovine virus on "vaccine forms," has developed large "business" enterprises, and, of necessity, many depositories for the sale of the virus have been established, usually in drug stores. In some of these depositories it is not always certain that the virus is fresh enough to insure good results. Vaccine, as a rule, should not be kept over about eight days; its use after that is liable to result in failure.

Two years ago I supplied myself with "material" sufficient to vaccinate ten children—"primaries." The druggist assured me it was sent to fill my order the day before. The

[1] "Lancet," 1871.

ten children were vaccinated. Calling to see results a week after, I found that all but one had failed utterly, and that one gave an unsatisfactory result. I saw the druggist, and became satisfied that he had told me a "business" lie to sell his goods. I procured other virus, and again vaccinated the children, when, upon examination, all had taken. How much "revaccination" may possibly be done with that kind of vaccine material? and who can tell whether the failure of the operation is due to insusceptibility of the individual, or to too old vaccine material? It may be that I am unjust in suspecting that some of the public vaccinating may be of the kind I have just mentioned, and, of necessity, of little or no value.

The health of the people is of the greatest possible importance, and the health authorities of a nation, state, city, or town should certainly be clothed with very great power, so that, in times of danger from threatened epidemics, prompt, decisive action may be taken to protect the inhabitants from impending disease and possible death. In the instance of the disease under consideration—small-pox—when, through vaccination, there is so much promise of control, and even of complete prevention and extermination, it would seem eminently proper that our health boards should have authority to introduce and execute a complete system of preventive measures. They should have under inspection and control the entire production of vaccine material. Vaccination should be compulsory, reaching all classes and persons. All children should be vaccinated during the first year of life; all youth should be revaccinated between the ages of fifteen and twenty; and all immigrants should be vaccinated on shipboard, or before they are allowed to leave the place of landing or to pass into any city or town of the country. In case of an epidemic or impending epidemic of small-pox, the health board having jurisdiction should have authority to compel a general revaccination of all persons in such locality who have not been so operated upon within from seven to ten years.

DISCUSSION.

Dr. John P. Garrish, of New York county, rose to endorse fully the views expressed in regard to vaccination. He regretted to state that there were many persons, including even professors in colleges, who opposed vaccination. One thing the writer had not touched upon; that was, the time of vaccination. Dr. Garrish believed that the child should not be vaccinated under four months: under that age he thought it would not act as a preventive. To prove the importance of vaccination, it was only necessary to refer to statistics, which were altogether in favor of it. He related a case in which he attended a lady in confinement at the full period of gestation, whose entire body was covered with pustules of small-pox. To his utter surprise the child was born perfectly healthy. He let the child go until it was four or five months old before he vaccinated it. It had not had a single pustule. The vaccination took.

SPECIALISTS.

By H. C. Van Zandt, M. D., of Schenectady County.

September 29, 1887.

The art of medicine, with all its kindred and allied sciences, embraces a wide field for investigation, and necessitates a vast fund of accumulated ready knowledge for the correct interpretation of its many phenomena, and the successful appreciation of its many methods. It is perhaps well that one standing on the threshold of the study cannot see very far ahead, or the vastness of the undertaking would appal and discourage him. It is with medicine as with all other sciences,—the farther we progress, the clearer becomes the need of still farther progression; and through the avenues, which at first seemed to end in darkness, we may begin to discern the shadowy form of things far beyond our ken, until at last it dawns upon us that, while the possibilities of our scheme are unlimited, its probabilities are measured by our zeal, energy, and faithful devotion to its study.

It is perhaps this idea of the far-reaching scope and range of our science which stimulated the notion that to be enabled to reach anything like the summit of attainment during the short space of a natural life-time, one must devote his energies to a part, rather than attempt to acquire the whole, of the science. A laudable desire to be master of what was proposed has led many to renounce the greater part of an art and confine their labors to some special department, not ignoring the general harmony of all the parts, but professing, by the proficiency reached in the several departments, distinctively to elevate the whole. Whether all the divisions in practice arise from this praiseworthy motive, or from a lack

of energy to master the whole, and an intuition that it pays better to practise a part rather than the whole of medicine, I am in doubt, and can find no way of resolving that doubt; but it is sure that the outcome has been so prodigious that now there is scarcely an organ or region of the body but has its special devotee, or a class of diseases but has its special professors and practitioners.

A well-to-do lady in Schenectady, having occasion to send for a physician, is reported to have prefaced the professional interview with the statement that the eminent neurologist, Dr. A., had taken charge of her brain and nervous system; Dr. B., the celebrated physical diagnostician, had looked after her heart and lungs; Dr. C., whose book on diseases of the liver had made him famous, attended to her digestive organs; Dr. D., the distinguished gynaecologist, treated her uterine functions; Dr. E., the renowned orthopaedist, had been consulted about her joints and limbs; Dr. F., the great ophthalmologist, cared for her eyes and ears; Dr. G., the leading dermatologist, prescribed for a cutaneous affection. "Why have you sent for me?" asked the doctor; "there is nothing left but the umbilicus. As my specialty is pathology, if you will have me summoned after your death, I will gladly make a post-mortem examination."

What may have been the first cause of the dividing and sub-dividing of practice, I do not know; but I do know that it has reached nearly to infinitesimalism. I very much fear that its followers will become schismatic, narrow-minded, and eventually lose sight of the general good in their endeavor to measure everything in their pint cups.

I can readily conceive how a man, with a well balanced mind and a broad foundation of scientific and general knowledge at the outset, may confine his later labors to a portion of one science, and not be restricted in his vision or inquiries; but I question if there be not many who practise some specialty, who comprehend very little outside of their daily routine. Certainly the restricting habits and nature of their work would tend to lead them into such a rut unless they had

been previously accustomed to broad views and an excellent practical knowledge of the whole field of medicine.

It is no complaining or fault-finding mood which suggests these doubts and queries, but an honest effort to weigh in my own mind the arguments and test the premises as to whether these divisions of practice into so many specialties are really a benefit or a hindrance to the advancement of our science as a whole. It is true that there are notable exceptions to this rut-running specialism—men whose liberal views, learned words, and good works, both in their own and other departments of medicine, whenever time allowed or occasion required, have been treasured by the profession; but that the exceptions are notable is the difficulty. They should be the rule, if there be anything in the theory that by restricting effort to a part, the specialist is able to climb higher and see farther than the general practitioner.

Statistics, as far as I have been able to collect them, show that most of the great strides our science has taken have been at the push of men from the ranks of the general practitioners—men who, from their large scientific knowledge of the whole field of our profession, were enabled properly to adjust and compute the factors which entered into the solution of the problem then in hand.

As well might one expect a number of workmen, who were each accustomed to make certain parts of some complex mechanism, without any general practical knowledge of the whole machine, to improve, develop, and extend its usefulness. It needs some one who comprehends the whole matter,—who knows the value and place and work of each part, as well as the general laws of mechanics, who can survey the whole field, find the needs, see the wants,—to develop, enlarge, and perfect the mechanism. A knowledge of any one part, be it ever so accurate, would never accomplish much for the whole.

Perhaps none of us can be very expert in many things, but is it not better for the general good to be moderately expert in several things than to be acutely so in only one?

This restricted thought, or work, is very apt to make those

who follow it narrow-minded and intolerant. No clearer evidence of this is needed than the commiserating expression with which some of them look down upon the general practitioner from the self-exalted eminence of their several specialties.

Another idea has been forcibly presented to me from observation of some specialists' practice. "It is all grist that comes to their mill." No matter what the specialty may be, and no matter what may be the nature of the ailment presented by the patient, the strained effort is always to bring it somehow or some way within the pale of this specialty,—to find a cause for all the phenomena in the organ or region treated by the specialist applied to; and, strange as it may appear, the grosser his ignorance, the more readily he accomplishes this to at least his own satisfaction. Not long since a case came to my knowledge in which a so-called oculist would have operated for strabismus in a child plainly ill with hydrocephalus. He saw the squint, but could not see beyond it; and a squint was all in all to him. Cases have been known to me, and no doubt to most of you, which have been treated by one specialist after another, each of whom assured the patient that the ailment was something within his special department, when, in reality, they were all wrong. Mistakes in diagnosis may happen to any one occasionally, but when they are constantly occurring they cease to be pardonable, and are certainly not calculated to exalt the status of the general profession, which has to bear all the sins of all the schisms.

There are several other circumstances connected with the practice of these specialists, which, to my mind, are very far from being conducive to the elevation of the profession, either in their tendencies or results; but I will not consume your time in dwelling on them.

If we are to encourage these divisions and splinterings, and allow the minor twigs, in spite of the axiom in relation to the whole or a part, to imagine that they are the trunk and we the branches, we shall soon have the sturdy oak of our profession split up into kindling-wood, and not much more significant.

We should not deprecate the pursuance of a definite line of study by earnest, honest men; but we should discourage the running off at a tangent of any rattle-brained person, who, having tried general practice for a year or so and miserably failed, immediately takes up some sub-department of medicine which his inclination may point out as alluring, and becomes a specialist. We all know that this is quite a common resort of unsuccessful general practitioners; and we ought also to know that such procedures are not calculated to lead to any very lasting scientific triumphs.

In these days, when an earnest effort is made to guard the portals of our profession from the entrance of unfit persons who might bring discredit upon it, it may be also wise to frown down the tendencies and practices, even of those within our ranks, which are destructive or hurtful. I take it that we are all trying to do what we can for the good of our profession, and therefore I may be pardoned for this rambling reference to an evil which may grow.

DISCUSSION ON PLACENTA PRAEVIA.

REMARKS INTRODUCTORY TO A DISCUSSION ON PLACENTA PRAEVIA.

By GEORGE TUCKER HARRISON, M. D., of New York County.

September 29, 1887.

No theme in obstetrics exceeds placenta praevia in interest and importance. Involving, as it does, great danger to both mother and child, it is a subject of congratulation that art can here accomplish so much, especially when art goes hand in hand with science,—or, to express it in other terms, when our therapeutical endeavors have reference to certain anatomical, physiological, and pathological facts which recent science has revealed. The history of this subject does not go far back into the remote past. It is true that it has been asserted that Hippocrates describes placenta praevia in his discourse upon "Superfoetation," but the only passage to be found in this treatise, which a vivid fancy might interpret as referring to this subject, is the following: "*Si parturienti ante foetum multus sanguinolentus citra dolorem fluxus contingat, periculum est ne foetus mortuus exeat, ante minime vitalis edatur*"—If a copious bloody discharge happen to a parturient woman, without pain, before the birth of the foetus, there is danger that the foetus may die, before, at least, it is delivered alive. In fact, the first unequivocal mention of this morbid condition dates from Guillemeau, 1608. This author, as after him Mauriceau, 1668, entertained the opinion that the placenta was originally attached to the fundus, but subsequently prolapsed. Schacher,[1] of Leipzig, however, in the latter part of

[1] Schacher Polyc. Gottlieb et Seyler, Christ J., *De placentae uterinae morbis*, Leips., 28 Nov., 1709.

the year 1709, on opening the uterus of a gravid woman, who had died from haemorrhage, found the placenta adherent to the margin of the internal *os uteri*, and drew the correct inference that, without doubt, "*primis gestationis temporibus radices in hanc uteri partem immiserat*"—it had implanted itself at an early period of gestation upon this portion of the uterus. In 1715, Johann Van Hoorn, who was probably a pupil of Paul Portal, published a manual for midwives, and in express terms mentioned that "sometimes the placenta, at the very beginning of pregnancy, is implanted upon the mouth of the uterus, whence, as soon as the latter opens, the former necessarily becomes detached; and the more it is detached, the greater the amount of blood from the lacerated vessels." Portal, 1688, himself speaks of having found the placenta adherent to the internal *os uteri*, but hazards no opinion in regard to its origin. In 1730 Johann D. G. Brunner, a pupil of J. J. Fried, maintained a thesis at Strassburg, "*de partu praeternaturali ob situm placentae super orificium uteri internum*"—on preternatural birth on account of the placental site over the internal mouth of the womb—and added three cases to those already known. If they were preceded by others who had the proper idea in regard to placenta praevia, to Gifford and Levret indisputably is due the merit of having established the true doctrine on a firm basis. From this time the correct knowledge of placenta praevia was generally taught.

A critical study of the history of this subject would serve to illustrate most forcibly how slow the human mind is to grasp important truths, and how it has to be educated, step by step, to understand them; and, moreover, that advancement in knowledge at one period is followed by retrogradation at another. But however inviting this field may be, it is beyond our purpose to enter it. As preliminary to a just comprehension of the phenomena exhibited by placenta praevia, a study both anatomical and physiological of the lower uterine segment and the cervix during the latter part of gestation, and during labor, is indispensable. After the older

views, in regard to the behavior of the cervix during pregnancy, had been overthrown—and in this connection the researches of Dr. Isaac E. Taylor are worthy of special commendation—it seemed as if our knowledge were established on a secure foundation; but recently the medical world was astounded by the arguments brought forward by Bandl in successive publications, which, resting on extensive observation, seemed to found anew the older view, with some modifications. The result of these writings, and of the discussions to which they gave rise, has been to show that during labor the uterus is differentiated into a retracting and thickening upper part, and into an expanding thinning lower uterine segment and cervix. In the graphic language of "The Lancet" (Feb. 26, 1887, p. 437),—"The lowest part of the retracted fundus is felt after labor as the bottom of the hard uterine cricket ball; below it comes the cervix and 'lower uterine segment,' hanging loose, apparently unretracted and passive, like a piece of flabby hose." As to what is lower uterine segment and what cervix has given rise to embittered controversy. For my own part, from clinical observation, I am firmly convinced of the correctness of the views advocated by Schroeder and his pupils, and confirmed by Chiari, and, with Hofmeier, believe that "the lower uterine segment forms a well characterized part of the uterine body, both from its anatomical structure and from its mucous membrane investment, and that it differs essentially in both from the cervix in the pregnant, as well as in the puerperal, uterus. It differs not unessentially, macroscopically as well as microscopically, from the remaining part of the uterus, and deserves, therefore, with right, a separate designation."[1]

During labor the lower uterine segment is essentially passive in contrast with the upper part of the uterus, which exhibits active contractions, the boundary between the two being well designated by Schroeder as "ring of contraction." And here I would remark, that no one who reads the reports of cases of placenta praevia with which our medical periodi-

[1] "Der Schwangen u. Kreissende Uterus." Bonn, 1886, p. 70.

cals teem, or who carefully peruses the elaborate expositions devoted to this subject in our best text-books, can fail to be struck with the diversity of views obtaining among medical men, both as regards pathology and treatment. The consequence is, that the average practitioner of medicine, when called upon to cope with the difficulties of a case, finds at the bedside that his knowledge is intangible and evanescent. Let us see, then, if it be not possible to strip the subject of unnecessary details and the refinements with which it has been encumbered, and to get at the heart of the main facts of pathology and treatment. The single but all-important symptom of placenta praevia is *haemorrhage*. This haemorrhage is caused by the detachment of the placenta from the uterine surface adjacent to the internal *os uteri*. What now, we ask, is the mechanism of this separation? As Matthews Duncan has clearly demonstrated, the placenta, under these circumstances, is not detached by a contraction of the lower uterine segment, but, on the contrary, by an expansion of the lower part of the uterine cavity. "The lower part of the cavity of the uterus," observes this author, "as it is distended in advanced pregnancy, is part of a spheroid or hemi-spheroid, with which the cervix is in connection, and of whose surface the internal os of the cervix occupies the vertex. To form the genital passage for the child, this hemi-spheroidal shape is destroyed by the expansion of the above-named internal os of the cervix and of the adjoining parts. That which formed during pregnancy a portion of a spheroid, forms during the passage of the child a small part of a nearly cylindrical tube."[1] The parts lying near the internal os must necessarily be the most extended in a transverse direction. Under physiological conditions the placenta is detached, because it cannot follow the strong contractions of its surface of attachment. In placenta praevia, on the other hand, the detachment occurs because it cannot follow the extreme extension of its site of attachment. But, as Schroeder correctly observes, that part of the uterine cavity, out of which the lower

[1] "Mechanism of Natural and Morbid Parturition."

uterine segment is formed, is quite a narrow zone to which only a portion of the praevious placenta is attached. It is necessary, therefore, to seek an additional cause for an explanation of the detachment of the placenta and the subsequent bleeding. As we have just said, the uterus, in labor, is differentiated into an ever thickening and contracting upper part, bounded by the ring of contraction, and the constantly thinning and expanding "lower uterine segment" and cervix for the passage of the ovum; and coincident with this change the greater part of the uterine body retracts on the ovum, and consequently the ring of contraction slowly moves upward. This disturbed relation between the inner surface of the uterus and the surface of the ovum, which occurs in labor, is most marked in the vicinity of the internal *os uteri*, and consequently these parts are most retracted. In placenta praevia, if the bag of membranes is intact, the placenta cannot change its position on the ovum; and consequently, with the progressive dilatation of the internal os, the separation of the placenta goes on *pari passu*, each forcible contraction detaching additional parts of the placenta. On the contrary, if the bag of membranes breaks spontaneously, or is artificially ruptured, the placenta is not compelled to maintain its original position, but can retract with the uterine body, and hence, as a rule, a cessation of the haemorrhage.

The source of the bleeding is the placental site. Clinical observation has amply shown that in placenta praevia centralis the bleeding begins usually during pregnancy, while in placenta praevia lateralis there is no bleeding ordinarily until labor begins. The explanation is to be found in the fact that the "lower uterine segment" is formed, and the internal *os uteri* expands to a certain degree during pregnancy; and consequently, in placenta praevia centralis, the bleeding begins in the latter months of pregnancy suddenly and unexpectedly. In treatment, the problem we have to solve is to guard the patient against two dangers which menace her existence—*bleeding* and *sepsis*. Dangerous, nay, fatal, bleeding may occur in pregnancy, during delivery, and after child-

birth. The special liability of women who are the subjects of placenta praevia to septic infection is readily explained by the low situation of the placenta, and by the lacerations so frequently produced in this anomaly—a condition of things affording but too favorable a gateway for admission into the system of infective matter, through the agency of the examining fingers of the accoucheur. Moreover, the intense anaemia consequent upon the great loss of blood they have sustained, which is so common in this class of patients, particularly predisposes them to *puerperal septicaemia.* This is explained by the extensive thromboses to which the anaemia gives rise, and by a more rapid absorption incident to this condition,—a favorable soil for the infecting agent being thus produced.

The solution of the problem just enunciated is best accomplished, I believe, by a resort, as early as possible, to the bipolar method of version introduced by Braxton Hicks, who demonstrated, in 1860, that as soon as the cervix would admit one or two fingers this method was applicable in placenta praevia. This procedure is guided by two leading motives: by emptying the uterus before much loss of blood, we produce a contraction and retraction of the muscular uterine tissue, and secure the patient against the dangers of subsequent uterine atony; and again, by superseding the necessity of the use of the vaginal tampon, we eliminate a potent cause of sepsis,—the breech of the child performing the function of a tampon. The preliminary act of rupturing the membranes just before version has, as a rule, the effect of controlling or moderating the bleeding, as physiological considerations would, *d priori*, lead us to expect, because, under these circumstances, the membranes of the ovum and the placenta can retract upward on the child. This procedure offers comparatively little difficulty in cases of placenta praevia lateralis; but when the placenta is centrally implanted, it is often necessary to perforate that structure in order to attain to the cavity of the ovum, and this necessity diminishes the chances of the child's life. The suggestion of Zweifel[1] is here worthy

[1] *Vide* Lehrb. der Geburtshülfe. Stuttgart, 1887, p. 454.

of trial,—that is, to turn the woman on her left side, and to pass two fingers up behind the symphysis pubis between the placenta and uterine wall, because by this method of procedure it is possible to penetrate farthest above; and thus the perforation of the placenta may often be avoided. The splendid results obtained by Hofmeier, Behm, Lomer, and Olshausen, have demonstrated the efficacy of this method in reducing the fearful mortality, as far as the mothers are concerned, to a very small percentage. It cannot be denied, however, that the mortality among the children, with the adoption of this method, has not been diminished, nay, it is possibly increased, especially in cases of central implacentation of the placenta. The problem of the future is to endeavor to diminish this terrible sacrifice of child life. For its solution we may be helped by bearing in mind the above suggestion of Zweifel; and farther, it should be our endeavor to improve our antiseptic methods so that it may be in our power, in cases of placenta praevia centralis, to make use of vaginal tampons without danger of sepsis until the os is sufficiently dilated to allow us to rupture the membranes, and thus supersede the necessity of a perforation of the placenta. The importance of slow extraction, after a leg is brought down, cannot be too earnestly insisted upon in view of the great danger of causing laceration of the cervix, if too much force is brought into play. Behm allowed the child to be born spontaneously, after version; and certainly his remarkable success may well challenge our attention to his precepts.

It seems scarcely necessary at this day to urge that, above all things, the principles of antiseptic obstetrics should be carried out to the minutest details in these cases. Never should the obstetrician intervene until the external genital organs have been carefully washed with soap, and afterward disinfected, and the vagina and cervix douched with a five per cent. solution of carbolic acid, or, if preferred, a solution of mercuric chloride (one to two thousand).

In cases of bleeding during pregnancy, when the cervix is not sufficiently dilated to allow the passage of even one finger,

is it justifiable to induce premature labor? Under these circumstances, I am of the decided conviction that such a procedure is contraindicated as greatly enhancing the danger of septic infection. The use of a tampon, or a colpeurynter, will almost certainly in a few hours be followed by such a dilatation of the cervix as to allow the admission of one finger, and consequently the employment of the bipolar method of version.

It is not intended, by any statements heretofore made, to deny the well attested fact that many cases of placenta praevia proceed to a favorable termination without artificial intervention. This, of course, is much more likely to occur when the placenta is laterally than when centrally implanted. In some cases of central implantation the child has been born wearing the placenta like a cap on its head, the uterus, in such cases, acting with unwonted energy. "On this, the well known treatment of Simpson"—to quote from the excellent editorial of the "Lancet"—"the complete detachment of the placenta by the hand, and its modification by Barnes—partial detachment—were founded. It is to be remarked that Simpson's treatment was founded on an interpretation of the phenomena, which implied that the woman was delivered safely because the placenta was detached; whereas, in our opinion, such cases only show that the uterus acted with unwonted vigor, shortening the dangerous period and producing good retraction, which, as is well known, is the only safeguard against bleeding. Detachment of the placenta, apart from vigorous uterine action, is only an increased element of danger; but most cases of placenta praevia do require prompt and wise intervention, and to wait for their spontaneous termination would be as wrong as to wait for some form of spontaneous expulsion or evolution in a cross-birth. Treatment, to be rational, must be founded on the pathology and natural history of diseases: in other words, it must take cognisance of the causes of death, with the view to avoiding them, and of the manner in which nature deals with them when she does so successfully." [1]

[1] "Lancet," Feb. 26, 1887, p. 427.

In concluding these brief remarks, which are only intended as a prelude to a rich symphony to follow, may I be permitted to indulge the hope that the discussion of this great theme may be such that it will contribute to the increase of our knowledge, in the sense of Lord Bacon, and aim "to separate and reject vain speculations and whatsoever is empty and void, and to preserve and augment whatsoever is solid and fruitful; that knowledge may not be as a courtesan, for pleasure and vanity only, or as a bond-woman to acquire and gain to her master's use, but as a spouse, for generation, fruit, and comfort."

QUESTION I.

IN CASES IN WHICH THE PLACENTA IS PRAEVIA, WHAT ANATOMICAL AND PHYSIOLOGICAL FACTS EXPLAIN THE HAEMORRHAGE OCCURRING DURING PREGNANCY, AND WHY IS HAEMORRHAGE UNAVOIDABLE DURING MISCARRIAGE OR LABOR?

Discussed by

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DR. CARLTON C. FREDERICK.

In 1847 Robert Barnes showed by physiological and clinical evidence that there is a boundary line in the uterine cavity, above which there is an easy relation between the contractile limits of the muscular structures and that of the cohering placenta, where spontaneous placental detachment and haemorrhage do not occur. Below this line the relation is lost. The lower "polar circle," as he called it, is the line of demarcation between the praevial and normal placental attachment. It is the boundary line below which we have spontaneous placental detachment and haemorrhage.

This lower "polar circle" of Barnes, reasoned into existence from theoretical data, is identical with the ring of Bandl—a muscular band, anatomically demonstrated in later years by him whose name it bears.

All that part of the uterus above the ring of Bandl is called the upper, and all below it the lower, segment.

The lower segment in the more fully developed pregnant uterus presents several points of difference as compared with

the upper segment: (1) It is thinner; (2) the muscular structure is less marked; (3) it is less rich in blood-vessels. With the placenta wholly or partially implanted within this lower uterine segment, why does haemorrhage occur during pregnancy?

Levret and Rigby, and their followers till the time of Stoltz and others, believed that after the fourth and fifth months the cervix began to expand at the internal os and shorten, thus entering into the uterine cavity to furnish room for the growing foetus. As a result of this belief, haemorrhage occurring during pregnancy in placenta praevia was easily explained: as the cervix began to expand, it drew away from its placental attachments, and rupture of blood-vessels and haemorrhage followed.

On the contrary, Stoltz and others have shown that the cervix proper does not contribute in any way to the reception of the growing ovum, and that the cervix does not begin to change in length till the last two weeks of gestation. Resulting from this discovery, the weight of opinion has been in favor of the opposite theory, viz., that the uterine attachment does not expand too rapidly for the placenta, but that the most active growth is in the placenta itself; that the first detachment of the placenta arises from the excess of growth of that organ over that of the lower uterine segment; that the structure of this region of the uterus is ill fitted to keep pace with the placenta;—the latter grows beyond its site, it breaks away at the margin, and blood escapes.

This accident is more liable to occur at a menstrual period, when the general uterine engorgement tends to make the placenta still larger for its area of attachment. This is substantiated by the fact that haemorrhage commonly occurs at intervals of about a month.

The theory, that detachment of the placenta, when praevia, is due to its more rapid growth than the surface upon which it grows, finds its parallel in the case of tubal gestation. In the tubes, pregnancy progresses favorably till the ovum grows too fast for the tube to keep pace; then rupture and

haemorrhage occur. This also is reported as commonly happening near a menstrual period.

Dr. Robert Barnes drew attention to the fact "that before the rupture of the Fallopian sac, discharges of blood per vaginam often takes place." This is now generally recognised, and it sometimes happens in placenta praevia also, thus carrying out the analogy of the causation of haemorrhage in these two conditions.

Dr. Barnes thus tersely shows the parallelism between placenta praevia and tubal pregnancy: "Like tubal gestation, gestation in the lower segment of the uterus is an example of *error loci;* both are alike examples of ectopic gestation. In both, the ovum grows on a structure ill adapted to harbor it."

Unusual fatigue or emotion may cause the separation, for it is well known that emotion alone, in the non-pregnant state, may occasion haemorrhage. Another strongly disposing cause is found in the greater hydrostatic pressure brought upon the utero-placental vessels than is the case when the placenta is seated at or near the fundus.

Irritation at or near the cervix uteri uniformly excites more uterine contraction, reflexly, than if applied to other parts of the uterine tract. It seems that the dragging of the overgrown placenta upon the lower segment suffices to originate uterine contractions, partial placental separation, and haemorrhage. The uterus being more irritable at the menstrual epoch, and the irritation being greater, hence the more frequent operation of this cause at this period. Under the irritation of partial separation and infiltration of blood between the membranes, or into the soft parts of the placenta, perhaps coagulating between it and the uterine wall, more contractions follow and farther separation. In this way active contractions may be induced, and labor initiated.

If the placenta be critically examined in a case of partial placenta praevia, it is found that that part implanted below Bandl's ring is much thinner than that part more normally attached. Why is the praevial part thinned and atrophied?

Probably for two reasons,—(1) because of the smaller number and lesser size of the blood-vessels passing into it; (2) because of the pressure of the superincumbent foetus and fluid. With the normal adhesion of the placenta to the decidua serotina so much impaired, why should not slight acts of violence produce separation? It is only reasonable that the same causes, in lesser degree, which produce accidental haemorrhage in normally implanted placenta, will easily separate the praevial placenta.

Why is haemorrhage unavoidable during miscarriage or labor? Haemorrhage is *not always* unavoidable. Many cases, skilfully handled or left to nature, give very little trouble from haemorrhage.

Barnes, Spiegelberg, Duncan, and others showed by computation that the cervix and lower uterine segment must expand during labor to the size of a circle described with a radius two and a half to three inches in length, from a point a short distance above the internal os on the uterine axis as a centre. This circle corresponds in location to the ring of Bandl. If the placenta is attached anywhere within this area of necessary retraction, it must be detached, and there will be haemorrhage, unless the head or some other presenting part of the foetus prevents it by pressure upon the open vessels.

When the limit of dilatation has been reached, there is no physiological reason why any farther separation or haemorrhage should occur until the child is delivered, after which the remnant of placenta is cast off as in normal labor.

The degree to which the placenta is praevia is a large factor in determining the amount of haemorrhage possible, for, manifestly, the larger the area of placental attachment the more haemorrhage may result.

Labor in placenta praevia is often tedious, and characterized by inertia. Uterine contractions are feeble because the labors are frequently premature; there is defective muscular development, especially of the lower segment. The cervix and lower segment are tense, and slow to dilate, and the period

when haemorrhage is probable correspondingly increased. Protraction of the labor is not infrequently accounted for by faulty presentation of the child, transverse position being more frequent than in normal labor at term.

Because of the small number and imperfect development of the muscular fibres of the lower segment, the mouths of the utero-placental vessels are defectively ligated. Instead of having given to them more power by contraction and retraction, as in the upper segment, these muscles are weakened by stretching. Hence it is, after the delivery of the child, that haemorrhage, before controlled by the presenting part, is liable to recur. Nature's ligatures, however, generally come to the rescue, if properly stimulated so to do.

May not the dogma of "unavoidable haemorrhage," so deeply implanted in the minds of those who, guided in their practice by the fear of it, resorted to the "*accouchement forcé*," account in a measure for the hecatombs of women and children who have given up their lives from placenta praevia?

DR. ISAAC E. TAYLOR.

The question to which I have to respond on the subject of placenta praevia is,—

"In cases in which the placenta is praevia, what anatomical and physiological facts explain the haemorrhage occuring during pregnancy, and why is haemorrhage unavoidable during miscarriage and labor?"

A correct appreciation of the physiological fact or mechanism for the delivery of the placenta when praevia rests on the interpretation obstetricians place upon the anatomical discoveries of the anatomist of the muscular structure of the uterus, body, and cervix. To understand these views, and to explain that which I entertain respecting the physiological mechanism of childbirth, and when the delivery of the placenta is praevia, I have, first, to refer to their investigations and demonstrations.

A considerable difference of opinion respecting their views exists among themselves. The obstetrician bases his views

on the demonstrations of the anatomist whom he considers the most correct, and on his experience during delivery by the touch.

It is considered by anatomists that the uterus is composed of several strata of muscular fibres—the longitudinal, circular, and transverse. When the muscular fibres are in combination, during the act of parturition they become the powerful and expelling factors for the delivery of the child. Each layer of fibres has its own special function to perform in the important physiological act of delivery. The longitudinal fibres, however, become the chief and principal agents of the motive power for that purpose.

A marked difference of opinion also exists as to how those longitudinal layers are distributed in and through the uterus, and upon this fact will the physiological act of labor rest for an elucidation when the placenta is cast off and the haemorrhage becomes "unavoidable," whether "during miscarriage or labor."

Sir Charles Bell holds that "the longitudinal fibres of the uterus extend from the fundus to the os tincae through the whole length of the uterus, body and cervix." This opinion is accepted and adopted by many of the most prominent and distinguished obstetricians.

Sappey, Guion, Farre, DeVille, and Kölliker, since the publication of Bell's demonstrations, entertain a different view. They assert that the longitudinal fibres go down the anterior and posterior parts of the body only to the superior part of the cervix, and then debouch right and left and join each other, and form, as it were, a circular layer at the superior part of the cervix, and that they have no special relation to the cervix. This difference of opinion interprets a second important disagreement, and hence the very important one as to how the delivery of the child occurs when the placenta is praevia.

Now what are the anatomical structures composing the cervix uteri? To this principal section of the uterus, the lower third of the uterus, I propose directing my remarks,

anatomically, physiologically, and practically. I will endeavor to demonstrate from the observations I have made, and from my experience, how the flooding takes place, and why it must be unavoidable.

A third important consideration or fact arises to explain this physiological mechanism of the delivery of the placenta when praevia: Has the cervix uteri any performance to undergo during gestation, or has it not?

The performance or mechanism of the cervix uteri begins, according to the views of nearly all the obstetricians, until Stoltz's view in 1826 was promulgated, that the cervix uteri at *seven months* begins to shorten or lessen in its length, and coälesces with the body, leaving but a small hole or opening, which is closed, the os tincae.

Respecting the views of Stoltz or Cazeaux, the cervix remains intact until two weeks before the commencement of labor, and then it begins to shorten or unfold from below upward, the reverse of the former; and then the os internum or superior part of the cervix commences gradually to open and shorten through silent and painless contraction, when the cervix becomes amply and fully obliterated, the cervix moulded into the body of the uterus. If their language means anything, then there is a total effacement of the cervix uteri, which has moulded itself into the body of the uterus, assuming an oval shape. For the result of this mechanism of the cervix uteri during gestation, I refer to the diagram of Simpson and Tyler Smith, and the same is endorsed and produced in Barnes's work on placenta praevia.

From this representation the os internum is shown to be expanded to the diameter of three to four inches, and from twelve to fourteen inches in circumference, with the child's head located in the cervix uteri. It is in this dilated and expanded part of the uterus, the cervical zone, as it is called by some obstetricians, that the placenta is placed and exists when praevia. The cervical zone is spoken of as the dangerous seat when the placenta is in that locality.

In almost every obstetrical work representation of this

location of the placenta is published. The representation of this seat of the placenta was taken from Mr. W. Hunter's beautiful illustrations on the uterus, Plate XI, where the placenta is graphically displayed as being in the cervical zone. If any one will consult Plate X, he will see from the description of that plate that the placenta had been attached to the anterior part of the uterus, and was not originally in the cervical zone, and had not formed an early attachment to the lower third of the uterus, and grown with the cervix during the performance of the cervix uteri when it was moulding itself into the body of the uterus. It is, therefore, a great mistake, which has been handed down and published in all the obstetrical works as the correct seat of the placenta.

As far back as January, 1852, I recognised from my clinical observations, instituted from a different method of investigation than the touch alone, that the cervix uteri did not undergo any change whatever to coälesce or become absorbed into the body of the uterus during the progress of gestation, but that it remained intact, and was not used up in the general enlargement of the uterus which takes place during pregnancy to accommodate the growing child. The cervix uteri, though belonging to the uterus, is only an *annex*, and has its own special physiological functions to perform, as the body has, not only in parturition but in other senses, the eversion and inversion of the cervix and body. It is a passive organ, and remains so until the time of labor, whenever that begins. It is as much prepared physiologically, consequent on the physiological ramollissement, to fulfil the function of dilatation, expansion, and lengthening, as a channel for the delivery of the child, as the body of the uterus is physiologically prepared to contract to accomplish the delivery of the child. If this were not so, the child could not be born. The contraction of the cervix during labor, as asserted by some obstetricians, would prevent the delivery of the child, or of the placenta when praevia.

Although the views I have advanced are now admitted by

many, yet the interpretation respecting the delivery of the child, and hence of the placenta when praevia, has not been correctly understood; that instead of shortening during labor, the cervix is lengthened in consequence of there being no effacement.

As a verification of the discovery I have made, there had been no prior evidence from any authority, American or foreign, that I have seen or read of, till Hofmeier, November 7, 1884, presented the subject before the Obstetrical and Gynaecological Society of Berlin in a paper which he read before that society. His are the same views I entertained in 1852, and which, after more mature experience clinically, I presented to the New York Academy of Medicine in a short paper, with several post mortem specimens and illustrations, in 1862.

Hofmeier says that he was impressed with the great difference of opinion existing, and the practical importance of this subject. He obtained seven uteri from pregnant women, and one who had died during labor, all of which were examined. He wished, he said, to ask the questions, "Is the cervix maintained as a canal *till or nearly till* the beginning of labor?" Second. "Is there a segment which differs anatomically from the remainder of the organ, and which should be spoken of as the lower segment of the uterus?" The second and last question does not at the present time come under consideration. This was explained and considered extensively in 1862 and 1865, in my former papers on placenta praevia.

Hofmeier is distinct in affirming that in all his seven morbid preparations the cervix maintained its shape, and could be easily designated.

Sir Charles Bell says that he has not succeeded in discovering circular fibres of the os tincae corresponding in place and office with the sphincter muscle.

Murphy, that circular fibres have not been found.

Cruveilhier, on the contrary, says that the cervix is composed of circular fibres entirely.

Jobert, that the neck of the uterus is composed of fibres which form semicircles, and decussate without mingling.

Kölliker, that the cervix may be described as an occlusor of the body.

Farre, that the cervix cannot be considered to consist, like the body, of three coats, but only consists of a muscular and mucous coat, with a large admixture of fibrous tissue with the muscular element existing, which might be called the fibrous coat of the cervix. Clear section of this part gives an appearance of circles conveniently arranged.

Sir Charles Bell, respecting the mechanism of the delivery of the placenta, says,—"If the contraction of the womb be essential to the safety of the mother, what will be the effect of the attachment of the placenta to a part of the womb *which must relax during* labor?" Every one knows the peculiar danger of placenta praevia; that each labor pain increases the violence of the flooding instead of checking it. In such circumstances of the attachment of the placenta, the retraction (or pulling back, as some obstetricians call it at the present day) on the lower part of the womb being to a greater extent than on the fundus, will account for the too early separation of that part of the placenta which stretches toward that orifice, the os tincae, and also for the haemorrhage, which is a consequence of the partial separation.

An eminent authority of England, whose views and opinions have been widely current, rests his physiological explanation of the delivery of the placenta on the anatomical foundation of Bell, and says,—"All the placenta fixed here, whether it consists of a flap overreaching downward from the meridional zone, or whether it be the entire placenta, is liable to previous detachment. The mouth of the womb must be pulled open to give passage to the child. This enormous *contraction* or *retraction* of the longitudinal fibres is incompatible with the preservation of the cohesion of the placenta which is within its scope. *Expansion*, dilatation of the mouth, is contraction of the cervix. This contraction, by shortening the cervical portion of the womb, casts off the placenta, and exposes the ruptured mouths of the utero-placental vessels. The effect is bleeding. The second (relaxation) is to stop the haemorrhage."

Sir Charles Bell, however, holds that "during the contraction of the superior part of the womb (the body), the lower part dilates and relaxes."

M. Duncan, on the mechanism of delivery, remarks that "On digital examination there is found merely a perforation or hole in the lower segment of the walls of the grand uterine cavity, and when the time of labor occurs, the body of the uterus in its regular contraction acts on the cervix somewhat as the arms pull on the legs of the boot while the foot is being pushed through it."

There certainly can be no mistake in comprehending this physiological description how the cervix is pulled back during the contraction to admit of its expanding and to allow the child to be delivered, and when the placenta is praevia how it must be separated, which is from below upward.

Bandl asserts that during the first pains there is a shortening or contraction of the muscular fibres inserted in the cervix, "the os tincae is opened, and the vaginal portion of the cervix disappears in the walls of the uterus."

There is not time allotted to develop farther evidence of this form of mechanism from other authorities on this special point, respecting the manner of contraction of the uterus and cervix to aid in the delivery of the child, and the shortening of the cervix during the act of delivery.

From these anatomical views and opinions respecting the longitudinal fibres of the uterus, and the physiological mechanism consequent thereon, I have to dissent, from my own experience and investigation. The cervix is acknowledged by all the eminent authorities I have referred to as anatomically and entirely distinct and different in its structure from the body. It is composed, as we have seen from these anatomists, of circular muscular fibres, with only a few isolated longitudinal ones, and a white fibrous structure element similar in some respects to the dartos muscle, and the performance of that structure.

The placenta is not physiologically or ever originally located in the cervix. The cervical mucous membrane is

also different in its anatomical structure and its physiological functions from that of the body. The body of the uterus is the only true habitat for the placenta during the term of gestation, and there it continues until it is cast off. It is no matter to what part of the body it is attached,—the fundus, sides, or over the os internum of the cervix. If the placenta is over the internal os, that orifice will remain closed and sealed over till the hour of labor commences, whether it is at an earlier period or not. The orifice is as perfectly sealed over as the orifice of the Fallopian tube is when the placenta covers it. The placenta grows *pari passu* with the body in its enlargement, as it does if the location of it be elsewhere in the body.

Cazeaux informs us that when the placenta is attached to the lower third of the womb, or some part adjacent to the internal orifice, is not because the after-birth is implanted over the internal orifice of the cervix that flooding takes place during the latter month of pregnancy, but because it is related with the inferior third of the uterus.

This has reference to the performance or mechanism of the cervix, which is beginning first at the os tincae to dilate and shorten and mould itself into the vagina, gradually advancing till the os internum is approached, and then, at the last two weeks, the internal os is silently and slowly opening through painless contraction of the body. The separation in this manner taking place, haemorrhage will now and then not occur till labor ensues.

From the clinical observations I have made for a number of years, I accept the anatomical investigations and demonstrations of DeVille, Sappey, Guion, Farre, and Kölliker, who assert that the longitudinal muscular fibres do not pervade the cervix uteri, or at least only isolated ones, but that circular fibres prevail, as well as the white fibrous structure similar in its function, in its contraction and relaxation, to the dartos muscle.

It is conceded that the chief and most efficient motive power to expel the child when labor commences rests solely

on the longitudinal muscular structures. The cervix has no relation in that act. It is only an annex. It is a passive factor, and becomes and is the channel, when labor is progressing, to expand, dilate, and lengthen to permit the child to pass through to be delivered. After the delivery, the cervix gradually resiliates and resumes the same form and condition as it had before the labor commenced, and is not left, as has been stated, relaxed, expanded, elongated, and thin. When the placenta is to be cast off, the same process is again invoked. An apt illustration, and one I have at times referred to, is the performance of the expansion and lengthening of the horse's anus during defaecation when the dung is solid, and the recession directly afterwards to its normal condition. The dilatation is fully three to four inches in diameter, and the lengthening the same at that time.

In a number of cases I have had the opportunity, through speculum inspections, to witness the physiological delivery of the child during the first stages of labor. In some of the examinations which were made with Ferguson's speculum of a very large diameter in these cases, and before the membranes had broken, the slightly tinged greenish colored membranes were seen projecting through the cervix, like the finger of a glove, when the os tincae was opened only to the size of a quarter dollar during the systole or contraction. After the systole, the membranes would recede and the cervix return to the same state and shape as before the membranes had passed through. There was no shortening or pulling back of the cervix in two cases of placenta praevia, one of which was published in the New York State Medical Society Transactions for 1865, with a diagram taken from nature by Mr. Kohler, in my paper on Facts Relating to Placenta Praevia. In that instance a portion or flap of the placenta had been separated by the contraction of the uterus on the left side, and protruded through the external orifice into the vagina. On speculum examination, the patient being a multipara, the parts were more patulous than usual, the flap of placenta was noticed as detached, and the source of the

haemorrhage observed. Several medical men were present, as also the house staff of Bellevue hospital.

The placenta, when implanted at the fundus or sides of the body of the uterus, is separated by the concentric contraction of the uterus after the birth of the child. In placenta praevia, it is by the direct and expulsive action of the longitudinal fibres driving the head of the child against the passive cervix with the placenta implanted over it, separating its slight attachment, cone-like, layer after layer, until it is either wholly or partially cast off, during each and every systole of the uterus. The separation commences at the internal orifice, progresses downward, expanding and lengthening the cervix as the labor goes on. The separation is not zone after zone, from the os tincae upward, as there is no placenta in the cervical zone to be separated, and no longitudinal muscular fibres to contract to pull open the mouth and to shorten the cervical portion of the womb by the contraction of the cervix for the placenta to be cast off and expose the ruptured mouths of the utero-placental vessels; on the contrary, during the contraction of the body of the uterus, the separation of the placenta from the lower part of the body of the uterus,—the internal orifice,—the haemorrhage is not from the contraction, but occurs during the diastole following the contraction. What blood comes while the contraction exists emanates from the placenta, and is pressed out during the contraction.

The views which I have for so many years entertained and given have relation solely to the question propounded as to the anatomical and physiological facts, having reference to unavoidable haemorrhage in placenta praevia.

The objections which I have presented are diametrically opposed to the opinions formerly entertained by many prominent obstetricians to whom I have referred. My views and opinions are based on over 3,000 cases since January, 1852, through ocular inspection and demonstration, to verify the original observation of the non-performance of the cervix uteri, and hence the non-coälescence with the body of the

uterus. There have been more than fifty observations to notice the mechanism of the delivery of the child in the first stage of labor; and in one especially, and shortly after the labor began, where the vulva was so relaxed, large, and patulous that the child's head was seen covered by the distended whitish-blue cervix, lengthening out during each contraction till the os tincae gradually dilated for the head of the child to pass out. These ocular demonstrations from an extensive field of clinical study embraced cases of pregnancy in all its stages and advancement. But in farther evidence, these observations on the living subject are corroborated by twenty-seven post mortem specimens taken from patients who had died previous to, at the time of, and after labor. In one specimen sent to me the placenta was located over the os internum.

I present these facts in response to the question propounded to me as to the anatomical and physiological facts which explain the haemorrhage occurring during pregnancy, and why the haemorrhage is unavoidable during miscarriage and labor, and the source from whence the blood emanates. These investigations are based on ocular inspection, divested of all theories founded on the touch alone, or on frozen specimens after death.

DeGraaf, in 1671, and VonHagen, in 1710, are supposed to have held the same opinion, but their views were formed by the touch. Weitbrecht, of Russia, is credited as having demonstrated it by a post-mortem specimen. His morbid specimen was a representation of only eight months, which is entirely irrelevant, and has no bearing on the subject of the non-shortening of the cervix during gestation up to the complete termination of it, or its coälescence with the body of the uterus.

On this important factor respecting the physiological mechanism of the cervix uteri during pregnancy, and its performance during the act of labor, rests the correct interpretation of the delivery of the child, and of the placenta when praevia, and the source from which the flooding emanates.

I trust that I shall not be accused of undue egotism in the statements I have made, and in claiming this discovery and refuting the erroneous opinion entertained, and showing its important bearing on the physiological mechanism of the cervix uteri during pregnancy, not only as to the delivery of the placenta when praevia, but its important relations as to eversions of the cervix and inversions of the uterus. Should any medical man have demonstrated it in the same manner previous to the enunciation I have made, I would most cheerfully acquiesce in his claim, though I have never read or heard of it except for the first time through the paper by Hofmeier above referred to.

I terminate my remarks on this subject with the following summary:

First. That the cervix uteri undergoes no change during pregnancy, and that it does not coälesce with the body of the uterus during that state.

Second. That the placenta is in the body of the uterus, and is not located in the cervix uteri.

Third. That the source of the haemorrhage which occurs during labor when the placenta is before the head of the child, takes place during the diastole, and not during the systole or contraction of the uterus.

Ruskin says that "A downright fact may be said in a pleasant way, and downright facts are what we want at the present time," and these are what the question calls for.

QUESTION II.

IN THIS ANOMALY, WHAT IS THE SOURCE OF THE HAEMORRHAGE, AND WHAT IS THE MECHANISM OF ITS ARREST?

Discussed by

DARWIN COLVIN, M. D., of Wayne County.
S. B. WYLIE MCLEOD, M. D., of New York County.

DR. DARWIN COLVIN.

I approach the discussion of this grave complication of pregnancy, the alarming nature of which no one will deny, conscious of my inability to parade a large number of clinical facts based upon personal experience, as it must be admitted that to every one exclusively engaged in private practice such an opportunity is denied. If, in more than sixteen thousand labors, there occurred only eleven cases of unavoidable haemorrhage, in the experience of Dr. Collins, how small indeed, if any, must be the number occurring to one in private practice, however large.

My notes contain the reports of only five cases—three in my own practice, and two in that of others. In two, there was a central implantation, the remaining three differing somewhat in the placental attachment.

On this occasion I am asked to say "what is the source of the haemorrhage, and what is the mechanism of its arrest." Authors and obstetricians, who advocate different sources, are so numerous, plausible, and ingenious in their arguments, that I confess to not having any well settled opinion with reference to the source; neither do I deem it advisable to extend this paper by quoting from authorities to any great extent, as it would be an unjustifiable waste of time. How-

ever, I beg to be allowed to refer to an elaborate paper, read at the annual meeting of the New York State Medical Society in 1865 by our distinguished president. In this paper, among other moot points connected with placenta praevia, the author discussed the source of the haemorrhage which occurs in these cases, and seems almost to convince the reader that it comes from the uterus. In support of his opinion, he quotes, among others, Legroux as saying he has "become convinced that the flow of blood from the vessels—the true haemorrhage—was diastolic; that the discharge of blood from the vulva—apparent haemorrhage—was indeed systolic, but coincident with the cessation of the actual haemorrhage. The cessation of the haemorrhage was the manifest result of the uterine contraction, of the tension of the membranes forcibly applied to the internal surface of the neck."

Again: The author of the paper says,—"It will be apparent that contraction of the uterus suspends the flooding, and that during the relaxation of the uterus the haemorrhage takes place." On the contrary, Sir James Y. Simpson says that "the blood issues principally, if not entirely, from the uncontracted and uncontractible maternal orifices that belong to the external surface of the separated portion of the organ; and the maternal blood is supplied more or less freely to these orifices in consequence of the free communication existing among the different maternal cells, and from these cells being kept filled with blood through the utero-placental vessels of that part of the placental mass which continues to remain fixed and attached to the uterus." To sustain this theory, he uses the following language:

> If, in placenta praevia, the haemorrhage proceeded from the vascular organ laid open in the interior of the uterus, it ought to be diminished and not increased in quantity during the pains, as these vessels would be necessarily, but temporarily, diminished under the contraction of the uterine fibres. If we adopt, however, the other view—that the discharge proceeds from the open vascular orifices existing in the outer or maternal surface of the detached portion of placenta—we can easily understand how its amount should be temporarily augmented by each labor pain, for each uterine contraction, in pushing down the presenting part of the

child against the compressible placental mass, will squeeze out from its maternal cells, as from a sponge, a portion of the fluid blood contained in them; and hence, during the pressure, an increased flow of this blood will issue from the vascular orifices opening upon its detached surface. During the intervals between the pains, a reäccumulation of maternal blood will take place in the interior of the placenta; but the quantity actually escaping will be comparatively less till again it is forced out in accumulated amount by the compression to which it is subjected by a returning pain.

Still in another paper, the most exhaustive ever written in America,[1] the author takes decided ground that the haemorrhage proceeds from both the uterus and the placenta.

In view of these widely different opinions, emanating from men renowned for their professional learning, it would ill become me to seek by argument to add to the catalogue of theories. I can see no good reason for this quibbling about what set of vessels the blood comes from, nor what matters it whether the blood, which escapes from the vagina, is expelled during the systole or diastole of the uterus, if the treatment for its arrest usually recommended is the safer and more judicious one for the practitioner to adopt; but I can well understand its importance if the one not usually advised, but which I have found successful, is properly carried out. It is the mother's blood, whether it comes directly or indirectly from the uterine vessels, and unless the torrent is arrested—and that speedily, in many cases—her life is forfeited; and who, in America, will not say that the life of one mother is of far more value than are the lives of a score of children?

While I confess my inability to say positively whether the haemorrhage proceeds directly from the vessels of the uterus or the placenta, yet from my experience, together with reports of a large number of cases of sudden arrest of the bleeding immediately after the placenta is expelled by uterine contraction previous to the birth of the child (in the language of Churchill, "decidedly the happiest termination"), or been completely detached by the accoucheur, I am induced to believe that the source lies in the placenta. To me, also, the

[1] Trask's Prize Essay, Trans. Amer. Med. Asso., 1855.

source is of but little importance, as in the few cases which I have seen one special course of treatment has invariably been successful in saving the mothers' lives; and I cannot readily consent to have applied to the results in my cases the phrase "good luck," in the sense in which it is ordinarily understood.

The mechanism of the arrestment of the flow, when the placenta is praevia, is one of tremendous importance to him who assumes its management. No sciolist in the practice of midwifery should be permitted in the lying-in room of a woman in labor if the placenta is praevia, even though our laws allow him to enter one in which the peril to the parturient is insignificant. The place is too sacred for the exhibition of his ignorance. The surroundings of the patient, even the very walls of her room, seem saturated with lethal forebodings.

I believe there is one course which should, as a rule, be pursued. Exceptions to it should be few. From the literature of the treatment of cases under consideration, together with my experience in those occurring in my own practice and those which have come under my observation in consultation with others, I would not, as a rule, advise an expectant course in the arrestment of the haemorrhage. I believe that the practitioner who enters upon a course the intent of which is to save both mother and child, will sooner or later confess his regret. While I do not deny that there may, occasionally, be a sporadic case where the mother is saved (the child rarely) if this rule is adopted, yet I believe that much oftener the result will be fatal to both. What argument can be offered for so unwise a course, if the statement be true "that there is no error in nature compared to this, for the very action which she uses to bring the child into the world is that by which she destroys both it and the mother;"[1] or, that "the peril to the woman is greater than it would be were a pistol ball fired at her head at the distance of a few paces?"[2] Extravagant as the last statement may seem, yet who questions the authority?

[1] Naegele. [2] Meigs.

In opposing an expectant course, as a rule, I desire to be understood that I consider the life of the child as entirely secondary to that of the mother; and, believing that efforts made to save both will oftener than otherwise result in the loss of both, I am impelled to leave the life of the child out of consideration, except in rare cases where the haemorrhage is slight from the implantation being in a very favorable region. I believe the emptying of the uterus, that the mother may be saved, to be the safer and more judicious practice. In what manner this can best be done will suggest itself to the accoucheur after a careful survey of the case in all its bearings. I regard the removal of the placenta, in the large majority of cases, as imperative, in order that the haemorrhage may be controlled, and the life of the mother saved. He must indeed be a bold man who will venture upon a campaign of what may be, under the most favorable circumstances, of weeks' duration, against so formidable an enemy as unavoidable haemorrhage, if the saving of both mother and child is to constitute the victory. Even though he might be fortunate in saving the mother (the child seldom), I can see nothing which he gains for so great a risk and anxiety. On the contrary, I can see much for him to lose, as the probabilities are that, after weeks of anxiety, unremitting surveillance, and solicitude, he will find himself foiled, and may be considered quite fortunate if he saves the mother. The accoucheur who places himself in this position is not to be envied, but pitied.

To me, the following seems a wiser, because a safer, course to pursue: If the case comes under observation before term, and is characterized by mildness throughout, affording no immediate cause for anxiety, palliative treatment may be instituted. But if the haemorrhage is copious, though for the time arrested, at the next recurrence, even though it be before the completion of term, and the placental presentation is not complete, the membranes should be ruptured for the purpose of inviting the extrusion of the uterine contents. If by this course, and the strength of the patient justifying a little delay, the haemorrhage should not be checked, I would

at once proceed to the complete detachment of the placenta, having but little confidence in what is said to be gained by a farther, though not complete, separation. Time is now too precious. A moment now lost is not all that may be lost forever, as a life is in jeopardy, and in danger of being added.

After the complete separation of the placenta, the haemorrhage almost invariably ceases; indeed, it has entirely ceased in each of the cases which have come under my observation. The case can now be left to nature, unless there should be something preternatural in the presentation, or some other complication justifying interference.

Occasionally, from want of uterine activity, but not until the patient shall have recuperated her powers, a full dose of ergot should be given, either hypodermically or otherwise, depending upon the condition of her digestion, to aid the expulsive efforts of the uterus, although, as a rule, no haste is now necessary, as the patient is usually safe.

Should she have arrived at the completion of her period of gestation, and haemorrhage has set in, mild or severe, with the placenta centrally implanted, I would begin its detachment as soon as it were possible to effect it, as haemorrhage at this time almost certainly proves fatal to the child. It is now that I cannot harmonize safety with delay. Even though the os uteri can be dilated sufficiently to admit of turning, yet I believe the removal of the placenta to be the safer procedure, as the shock is nothing when compared with that of version. In such a case, to save the mother's life must be the aim of the accoucheur. Delay and shock are quite likely to destroy. I feel positive that had I delayed the removal of the placenta, in the last case which came under my observation in consultation, for ten minutes, the woman's life would have been irrevocably lost.

A brief synopsis of the last two cases with which I have been associated during the past few years, and which, for the residue of my life, I hope will complete my professional experience with unavoidable haemorrhage, will bring my paper to a close:

At 11 P. M. I was asked to visit a lady in the country, who had been in labor under the care, since the night before, of an irregular practitioner, who had evidently abandoned the case at a time when the pains had subsided from exhaustion, under the pretence that she would not be sick for some time to come. Four hours after his flight I was sent for. Upon my arrival, I found her blanched I learned from an intelligent relative of the patient, who had been with her through the day, that the pains had been severe, and attended with great loss of blood; but being a plethoric woman and possessed of a vigorous constitution, she had well resisted the drain. I was also informed that at 4 P. M. the patient remarked, "*Since a large clot has come away, my pains and flowing have stopped.*" At this juncture of affairs her medical attendant took his departure without farther investigation. Four hours after, the pains returned, *but no flowing.* I made a vaginal examination, and found *the placenta completely detached*, and in the vagina. Upon removing it and examining farther, I found the child lying transversely to the brim of the pelvis, yet firmly doubled down, as it were, from the severity of the pains. Being unable to readily extract the child, and fearing delay, I emptied its thoracic cavity, and with the aid of the blunt hook delivered her. It is unnecessary to say that the child had been dead for some hours before my arrival. In this case, had nature not done what art, with an intelligent head to guide, should have done, a fatal result would have been unavoidable. The patient's recovery was rapid.

More recently I was hastily summoned to the bedside of a lady who was in labor at term, and under the care of a very clever practitioner. The woman was nearly moribund from the loss of blood. Upon examination, I found the placenta centrally implanted, as I believed. Death seemed imminent, as the pulse was scarcely perceptible. I advised the removal of the placenta, and at once proceeded to accomplish it, which was done, the os uteri being well dilated, in a short time. Notwithstanding the membranes had been ruptured some time before my arrival, yet the haemorrhage continued. *The moment the placenta was completely detached, the haemorrhage ceased*, and in a few minutes the patient improved. In this case had some radical believer in the theory that "to plow through" the placenta, thus implanted, was the true course, I can assure him that in his endeavor to apply it to this particular case he would have had, in a few minutes, as his reward, an undelivered exsanguined corpse. About two hours elapsed before the delivery of the child, the intervening time being fully occupied in stimulating and otherwise sustaining the patient. She also made an uninterrupted good recovery.

I could report another case, similar to the last, which had been treated by a very careful practitioner according to the usual recommendations of the text-books, and which promised

well to be fatal until the placenta was entirely separated from the uterus.

I am not unmindful of the fact that the treatment which I have pursued, and do now advise, in cases of unavoidable haemorrhage, is not the one usually adopted in this country, and is contrary to the rules laid down in our text-books; nevertheless, from the fact that the life of the mother in each of the cases which have come under my observation (one of whom seemed *in articulo mortis* at the beginning of the detachment of the placenta) was saved, I am irresistibly drawn to the conclusion that, with very few exceptions, the entire removal of the placenta is the most effectual way of arresting the haemorrhage, consequently of saving the mother's life.

DR. S. B. WYLIE McLEOD.

The impregnated uterus may be said to have three kinds of circulation in operation at the same time, viz.,—the placental, or that intended for the new being contained; the peculiar arrangement of its own veins and sinuses intended to supply that placenta; and that of the arteries and veins which are required for its own nutrition, and are in their essential characters, of course, independent of pregnancy.

Able writers have differed much in their views as to the locality from which the blood proceeds in placenta praevia, but it seems to me that each of these sources of blood-supply may play its part; and therefore, in answer to the question proposed, it is replied, that in the anomaly under consideration by the Association the source of haemorrhage is either the *placenta*, the *uterine sinuses*, or branches of the *uterine artery* or *vein*, or all.

The subject is one of great physiological interest, and may have an important bearing on practice.

The well known opinion of Prof. Simpson, that "the blood came from the placental cells, the supply in them being maintained by vessels connected with the still attached portion of the placenta," and the experiments and observations pub-

lished by him to sustain this theory, would be likely to convince any one disposed to bow to able authority.

On the other hand, Lee and Ashwell, Depaul and Duncan, Tyler Smith, Ramsbotham, and Dewees, are found as the advocates of another opinion, viz., that "the haemorrhage comes from the uterine sinuses or veins, and not from the placenta." To this I believe due credence is to be given, without entirely rejecting the conclusions of the great Edinburgh professor. It is probable that the blood flows from both of these places, and that it is the exclusiveness of ascribing it to one or the other that is the error to be avoided.

Radford, of Manchester, believes that it comes chiefly from this source, but partly from the placenta. It is well known that the uterus is supplied with its own nutrition from the uterine and hypogastric arteries, and that these are accompanied by veins; also, that in pregnancy the vessels become greatly enlarged and tortuous; that they break up into numerous branches and terminate in plexuses on the uterine mucous surface, thus indicating that the uterus increasing in size is to be more than proportionally sustained by blood-supply.

In the enlargement and ramification of the arteries and their accompanying veins, they do sometimes approach the margin of the os, the borders of the placental attachment, and the inner surface of the womb. Exposed by slight lacerations, or opening into sinuses having a means of egress, these also become a source of haemorrhage. Duncan speaks of this haemorrhage from rupture of utero-placental vessels, of rupture of a marginal sinus; Depaul, from the placental surface, and from its circular sinus at the border of the placenta; and Mackenzie and Snow Beck, from the gaping arteries at the points of separation.

The appearance and color of the blood effused, the suddenness of the gush, the rapidity of the flow, and the sudden death of the mother do in some cases make it more than likely that the blood is not always venous, as has been asserted, but arterial or mixed. We need therefore not be at

a loss in looking for sources of haemorrhage in placenta praevia, when we consider the exposed vessels of the vascular placenta, the enlarged and open sinuses of the uterus, and the abundant supply of blood in the womb from its own arteries and veins.

The other part of the question is, "What is the mechanism of its arrest?"

It is here to be kept in mind that the question is not the treatment of placenta praevia in its various details, but the mechanism of the arrest of the haemorrhage. I therefore confine myself to a very few points, to be briefly considered, viz.: Let the partial separation of the placenta be converted into a total separation, and the haemorrhage will generally cease. This is the plan proposed by Prof. Simpson, and is in accordance with his theory that the blood comes from the placental surfaces; the mechanism being that the blood-supply is cut off from the placenta by its complete detachment from the uterus. This method seems also to stop the blood from the uterine sinuses, because the removal of the placenta gives a better opportunity for contraction and closure.

Puncturing the membranes and letting off the liquor amnii reduces the size of the uterus, promotes contraction, and thus acts in two ways, viz., by relieving the vessels of the uterus and reducing the amount of blood therein contained, and also by permitting the descent of the foetus, causing pressure on the sinuses of the uterus, and thus arresting haemorrhage.

The tampon also acts by pressure; it is an obstruction, a dam, opposed to the stream of blood, and usually stops haemorrhage. The highest function subserved, however, is that of a temporary expedient.

The Barnes dilator resembles the tampon in action, but has many advantages. The mechanism seems to be that by its shape it closes completely the os uteri, holds itself in position, and separates that portion of the placenta immediately above its insertion.

If other expedients are not referred to here, it is because

they seem to belong more to the subject of treatment than to the matter immediately before us.

Fortunately, placenta praevia is not of frequent occurrence, and when it does happen there are many points in the arrest of the haemorrhage which are common to the cases of haemorrhage when the placenta is not praevia, and which are quite often met with. I refer to haemostatics, applications of cold, rest, ergot, etc.

Knowing, as I do, the amount of obstetrical erudition represented in this meeting, I have approached this desk with much hesitation,—more, I believe, than I would have in encountering a new case of unavoidable haemorrhage itself: and I will conclude this imperfect sketch with the expression of the hope that we may all feel that the time allotted to the consideration of the subject of placenta praevia has been agreeably and usefully employed.

QUESTION III.

IF PLACENTA PRAEVIA BE DIAGNOSTICATED DURING PREGNANCY, IS THE INDUCTION OF PREMATURE LABOR INDICATED?

Discussed by

T. GAILLARD THOMAS, M. D., of New York County.
WILLIAM T. LUSK, M. D., of New York County.

DR. T. GAILLARD THOMAS.

In spite of the great advances made in the management of placenta praevia by modern obstetricians, foremost among whom must be mentioned Simpson and Barnes, of Great Britain, the foetal and maternal mortality of this most formidable pathological condition leaves much to be desired. Compared with our forefathers, we are certainly well prepared to cope with this complication of labor; for the past century has developed the use of the tampon and colpeurynter, cervical water-bags, rupture of the membranes, and complete or partial placental detachment, as means of treatment. Even now, however, we have by no means arrived at a point at which we can rest from our labors with a feeling that we have at our disposal means by which under these circumstances the danger of death can be with any certainty warded off, for either mother or child. Great danger attends upon every case of this character from the seventh to the end of the ninth month, both before and during the parturient act. I have already fully admitted that by skilful management this danger may be to a great extent diminished; but for reasons which I shall soon mention, no degree of skill will ever abolish it entirely.

The placental separation, which gives rise to a terrible haemorrhage, will often occur when it will require a long time to obtain the assistance of the medical attendant, and during this time two lives may be lost; or slight haemorrhages will take place at short intervals, leaving the timid practitioner in so much doubt as to the true nature of the case, that enfeeblement of nerve power gradually creeps on in its insidious course until safe delivery at full term becomes impossible.

No practitioner, who has for weeks and months watched one of these trying cases in its perilous advance to full term, will charge me with too highly coloring the following picture:

At or about the seventh month a vaginal discharge has occurred in a pregnant woman to the extent of a pint, and in great haste the doctor has been summoned. He arrives, and the flow has ceased. In a fortnight this is repeated, and again in a week another flow occurs; and thus by a number of successive haemorrhages, or by one very excessive one, the lives of mother and child are compromised.

Should these premonitory discharges of blood be allowed to continue until full term is arrived at, even then the great danger of death to our two patients is not avoided; for in the first stage of labor another and a greater flow than has yet occurred must unavoidably take place. Hence the name "unavoidable haemorrhage" which has been applied to it. The pathological condition called placenta praevia is therefore a progressive one, and from the beginning to the end the danger attending it is cumulative.

(*a*) For the child to escape from its mother's womb, dilatation of the cervix is absolutely necessary; (*b*) for dilatation of the cervix to take place, detachment of the placenta is an unavoidable occurrence; (*c*) detachment of the placenta necessarily, "unavoidably," induces dangerous haemorrhage.

These facts being admitted—and they are incontestable—what arguments can be adduced for delay beyond the period of foetal viability in such cases? Up to that time such an argument can be sustained, but previous to the end of the

seventh month such haemorrhages are rare, and as a rule slight. After the seventh month the two sides of the argument may be thus presented:

Premature delivery is accomplished	*Natural labor occurs*
Upon a strong woman.	In an exsanguinated woman.
Upon a child nourished by a normal placenta.	With a child enfeebled by placental apnoea.
After a woman has rallied from the effects of haemorrhage.	To a woman while enfeebled by great loss of blood.
While the attending physician is at hand, and fully prepared.	While the physician is absent.
While the woman and her family are undismayed, and ready for the issue.	During a panic, and when patient and friends are very much alarmed.

A timid practitioner is apt to be misled by two fallacies, which should here be exposed: First, that as "meddlesome midwifery is bad," the interests of the mother are probably, and those of the child certainly, furthered by delay; and second, that even should the patient die by nature's efforts at full term, less responsibility would fall upon his shoulders. Both of these postulates are false; the safety of the child is furthered by premature delivery, for it can better grapple with the problem of respiration with its premature lungs, than trust to the placental respiration when the placenta is partially detached; and among the intelligent people of our day failure to use the means which science puts into our hands for the saving of life is more culpable than the Fabian policy of inanely waiting and watching.

In 1870 I wrote upon this subject, mentioning several cases in which excellent results had followed the resort to premature delivery in placenta praevia, and in 1877 I published eleven cases. Since that time,—that is, during the past ten years,—I have resorted to this plan in every case of this condition with which I have met, and after a large experience I unhesitatingly range myself among the strong advocates for the prophylactic treatment of placenta praevia by premature delivery.

DR. WILLIAM T. LUSK.

In considering the question of premature labor in cases of placenta praevia, it is to be borne in mind that the fatality of the complication is due, not so much to the impotence of obstetrical art, as to the losses of blood which occur suddenly in the absence of skilled assistance.

Barnes wisely remarks,—"If the pregnancy have advanced beyond the seventh month, it will, as a general rule, I think, be wise to proceed to delivery, for the next haemorrhage may prove fatal. We cannot tell the time or extent of its occurrence, and when it occurs, all, perhaps, that we shall have the opportunity of doing will be to regret that we did not act when we had the chance."

Previous to the seventh month haemorrhage usually leads to abortion, the management of which does not differ from that of abortions which take place in normal attachments of the placenta. Thus, of one hundred and twenty-eight fatal cases collected by Müller, not one death occurred previous to the seventh month.

The objections to prompt action are,—first, the supposed interests of the child; and second, the fear of having to contend with rigidity of the cervix—a complication which enhances the risk of delivery in placenta praevia, and to which there is always a tendency when labor is prematurely induced. As regards the child, however, it is to be remembered that if the haemorrhages begin before the child is viable, there is little hope of saving its life by delay. Even after the thirty-second week it is safe to say that the child's life is less imperilled by the induction of labor than by exposing it to the dangers of continued gestation. Haemorrhages occurring as early as the seventh month are, as a rule, the result of complete placental presentations, *i. e.*, the form in which the heaviest mortality occurs. In most cases the first haemorrhage is slight. It should serve as a warning, and prompt to a careful examination. If the diagnosis of placenta praevia is confirmed, the time for folded hands is past. Only cow-

ardice pleads for delay. The physician should not leave his patient until her safety is secured.

Often at the outset the cervix is found to be soft and dilatable. The patient should then be anaesthetised. The entire hand should be introduced into the vagina, and, with two fingers passed through the cervix, bipolar version should be performed; the membranes should be ruptured, and one of the inferior extremities should be brought down into the vagina. In this way haemorrhage is promptly controlled. The subsequent expulsion of the child may be left to nature, or slight traction may be made upon the limb in case a continuance of the bleeding makes increased pressure desirable. In reaching for an extremity the fingers should, if possible, be passed between the placenta and the uterine walls, or if, in complete placental presentation, this proves impracticable, the fingers may be pushed directly through the placental tissue.

If the cervix is rigid at the time of the occurrence of uterine haemorrhage, the task is slightly more difficult. It may necessitate the hot vaginal douche, and the preliminary use of Barnes's dilators. The vaginal tampon is now rarely needed. Probably in the near future it is destined to be discarded altogether.

Müller estimated, in his statistics, the death-rate under the older methods at not less than thirty-six to forty per cent. But by the prompt induction of labor, Thomas had but two deaths in 11 cases; Hecker had three deaths in 40 cases; Hoffmann, two deaths in 30 cases; and Murphy has reported 15 cases without a single death. The practical results of this measure in the hands of its advocates plead effectually in its behalf. It is needless to add that strict antisepsis is the condition of success. Of course version previous to complete cervical dilatation is attended by serious loss of infant life. Hofmeier has reported a mortality of 69 per cent.; that of Behm was 80 per cent.; and that of Lomer 50 per cent. But, on the other hand, Müller's statistics show that, with procrastination and the tampon, two out of three infants died, and that more than half of those born living died within the first ten days

QUESTION IV.

DURING LABOR, WHEN THE PLACENTA IS PRAEVIA, WHAT MODE OF TREATMENT BEST SUBSERVES THE INTERESTS OF MOTHER AND CHILD RESPECTIVELY? IS THAT PLAN OF TREATMENT WHICH BEST CONDUCES TO THE PRESERVATION OF THE MOTHER'S LIFE INCOMPATIBLE TO A CERTAIN DEGREE WITH THE CHILD'S INTERESTS?

Discussed by

ROLLIN L. BANTA, M. D., of Erie County.
JOHN SHRADY, M. D., of New York County.

DR. ROLLIN L. BANTA.

All the methods in vogue at the present day, for the treatment of placenta praevia, have for their object,—1. The prevention of the haemorrhage which invariably appears at the beginning of labor, if not before. 2. The complete avoidance of all septic infection. 3. The safety of the child, if compatible with the safety of the mother.

The methods worthy of mention are,—the continuous use of the antiseptic tampon in its various forms; early rupture of the membranes; stripping the placenta from its cervical attachment; artificial dilatation by fingers, Barnes's dilators, or similar other instruments,—all having the common purpose of prevention of excessive bleeding until nature can do her own work, or until there is a sufficient dilatation of the cervix for the application of the forceps, or the introduction of the hand into the uterus for version and subsequent slow or quick extraction of the child. Last, but most important of

all, to my mind, is the method of Braxton Hicks, which consists in bimanual version, rupture of the membranes, bringing down a foot or leg, and then leaving the case almost, if not entirely, to nature. The experienced obstetrician will choose that plan, or the best which the occasion requires. There is no doubt that the most skilful will obtain the most satisfactory results;—still, it seems to me that an operation, which is simple and easy of execution, and saves unnecessary manipulation, is the one which every practitioner should follow.

One thing always to be remembered in the treatment of placenta praevia is the location of the placenta. A partial implantation will almost always yield to any manner of treatment; while, on the other hand, a central implantation, to have a successful termination, must be met with promptness, decision, and skill. During the last ten years eleven cases of placenta praevia, in my own practice and in consultation, have come under my immediate notice. Seven of them were treated by the older methods, with the loss of two of the mothers by puerperal septicaemia; two of them had a severe and one a mild attack of this disease; one suffered with phlegmasia alba dolens. Four of the eleven were treated by Braxton Hicks's method, with most satisfactory results; and not one of the patients had a bad symptom following.

It will be seen from the above mentioned cases that the danger in my experience has not been so much from the haemorrhage as from the effects of the septic infection. They were treated at the time with antiseptic precautions,—not only perfect cleanliness of hands and instruments, but intrauterine injections afterward, the only exceptions being a few who were treated by the frequent use of the tampon; and whether these were made antiseptic or not it is impossible for me to say, as my services were required only at the time of delivery.

If, then, a certain mode of treatment has yielded me most pleasant results, it will be pardonable if this method is given prominence in this paper. "Speak well of a bridge that has carried you over safely," is an old saying, and a good one;

and, although the bridge has not been crossed very many times, it has been often enough to produce a feeling of safety in passage. Braxton Hicks's method is the one which seems to me the safest and best; and the remainder of the short time allotted to me will be given to a description of this method, and the reasons why it is preferable to others.

The first step necessary in this method is complete anaesthesia of the patient; next, sufficient dilatation of the cervix to permit the entrance of one or two fingers; the introduction of the hand into the vagina, and of one or two fingers into the cervix; the outer hand, placed upon the abdomen of the mother, moving the breech of the child in one direction, while the internal hand moves the presenting part in the opposite direction. Dr. Barnes says,—"The movements by which this is accomplished are a combination of continuous pressure and gentle impulses or taps on the head or shoulders, and a series of half sliding, half pushing impulses with the palm of the hand outside." As soon as turning is accomplished, rupture the membranes, and, having passed boldly through the placenta if it is in your way, take hold of a foot, leg, or, if necessary, hook a finger into a fold of the thigh; pull it down until there is pressure enough to stop the bleeding, and let nature do the rest.

The operation is easily effected, and can be done with a promptness that will surprise one who has never tried it. It does away with the dangers of infection by the tampon. Nature's plug is vastly superior; and experience has shown that gentle traction of the foot makes sufficient pressure on the bleeding vessels to stop at once the haemorrhage.

Of course, if the cervix is cone-shaped, long, and rigid, and the finger cannot be introduced, and there is haemorrhage enough to cause alarm, the antiseptic plug must be used until there is sufficient dilatation to pass at least one finger. But it will be found very seldom necessary to use the tamton; for, although each succeeding haemorrhage becomes more severe in placenta praevia, generally the os dilates sufficiently for your purpose before there is any cause for anxiety

from the loss of blood. Cervical laceration and the consequent danger of infection on account of the great vascularity of the tissues, is much less to be feared; for the soft parts of the child gradually distend the os, and labor is terminated in a natural manner.

Haemorrhage, as has been said before, is easily controlled by traction on the foot; and post-partum haemorrhage, which does not often happen, since there is no shock from forced delivery, yields to the hot antiseptic intra-uterine injection. The use of the tampon, dilating with rubber bags or in any other way sufficient to use the forceps or pass the hand into the uterus for the purpose of turning, no matter how well disinfected, have always been, to me, matters of no trivial importance, as taking up much valuable time, and thereby enhancing the danger of infection and exhaustion from loss of blood. But turning early, by the plan under consideration, avoids these dangers in a great degree by the comparatively short time in which it can be done, and by the slight internal manipulation necessary to perform it. Occasionally, when there is sufficient foetal mobility, turning can be performed without the aid of the internal hand, the only advantage being the short time it is necessary to keep the hand in the vagina.

Two of my cases, which were reported to the Buffalo Obstetrical Society, Dec. 22, 1885, were treated in this way,—that is, turning was quickly and easily accomplished by external manipulation alone; one hand was introduced into the vagina after version; the remaining steps closely followed Braxton Hicks's method. Of course, to do this, a certain knowledge of external palpation is requisite, which every well informed obstetrician is supposed to have, and which will render him valuable help, not only in the treatment of the trouble under consideration, but also in recognising the position of the child, if he fails to do so by digital examination.

Shortly after reporting to the Buffalo Obstetrical Society the cases treated by Braxton Hicks's method, a well informed physician, with a large obstetrical practice, reported to the

same society a case treated by this method. The woman died from flooding before the child was born; but he thinks that had he without delay introduced the hand into the uterus, turned, and quickly delivered, he would have saved his patient. No doubt he was right; and when the haemorrhage is so great, no matter whether the os is dilated or not, the life of the patient depends more on the judgment of the physician than on closely following any method or plan.

An able article on "Combined Turning in the Treatment of Placenta Praevia" was published in the December number, 1884, of the "American Journal of Obstetrics." To those who have never read this paper, and are interested in this subject, I would say that its perusal will amply repay you. Lomer probably has had a more extensive experience than the originator of this method, and the results obtained by him, as far as the safety of the mother is concerned, are unusually gratifying. One hundred and thirty-six cases came under his charge, with a mortality to the mothers of ten per cent. The death-rate by all other methods, according to the text-books, is about thirty per cent.—certainly a very favorable showing for the method of Braxton Hicks. Whether men of less experience could get such results is a question to be answered in the future.

Without doubt the perfect cleanliness which at the present day is considered a duty in all manipulations while attending a pregnant woman, and which, a decade ago, if understood, certainly was not put into general practice, had a great deal to do with the success of Lomer. But the method itself, if not the most favorable for the child, is beyond question the safest for the mother.

In regard to the prognosis for the child, it is probable that by slow extraction, or by leaving the case entirely to nature, a life is occasionally sacrificed. But the mother's life is of so much more importance that to me the question is hardly one for discussion.

He who would put the mother's life in danger by trying to save the doubtful life of the child would do well to ask the

wishes of the husband on the matter; and the answer will be one to leave him not long in doubt. Lomer has shown by a collection of statistics that the results obtained by the method are "no worse than hitherto obtained;" and he states that Kuhn "followed the fate of the children of forty-two cases of placenta praevia, and found two months after delivery only two of them were alive." As to the fate of the children treated by me by the other methods, it is impossible to give an account, as no record was kept. Of the four treated by Hicks's method, one is now living; one was a macerated child; in the other two, while trying to bring down a foot, the cord was also awkwardly pulled down, ending all chance of saving those children,—the fault being with the inexperience of the operator rather than with the method.

DR. JOHN SHRADY.

The greed for life is the glory of our calling. To snatch a standard from the arch-enemy of mankind is ever our aim. But unfortunately, as the late Dr. Alonzo Clark was wont to say, "one's best skill is too often buried with his patient." To the text of our theme I can but parallel the profession of no new views, and perhaps sketch out no invariable rules of practice.

Conditions are too variable and cases too dissimilar in the matter of tolerance of haemorrhagic effects for any writer to be dogmatical. The first indication really in the interest of the foetus, although generally credited to that of the mother, being to arrest the haemorrhage, our first attention must be in that direction. Albeit it should be constantly kept in mind that in these cases a few, a very few, gushes of blood are quite sufficient to destroy foetal life. The maternal alarm and the foetal death may be in fact coincident. This may be taken as a rule, although the exceptions are many and brilliant, the question as to how far exsanguination may go without danger being difficult of determination. The mother may rally, and the child be resuscitated. But in those cases

where the placenta has been spontaneously expelled, I take it that even with the best directed efforts toward speedy delivery, little or no hope for the safety of the child can be entertained. Here nature seems to treat the foetus as a foreign body, and expends her efforts for salvation upon the mother. The rallies of individuals in these instances are trully marvellous. The danger to the mother is mainly from shock, which is liable to pass from the temporary into the hopeless, the dead line indeed being exceedingly shadowy. The maternal heart, losing its stimulus, cannot well recover itself in time to save the individual economy. The sluice is open, and there is no return supply.

The fatality to mothers,—that of one in three,—I think, however, to be overstated, while that of sixty-five per cent. assigned to the children is, on the other hand, much below the truth: eighty per cent. would be a fairer estimate. The time at which the medical attendant appears upon the scene has much to do with the prognosis. The haemorrhage, being sudden, and usually without the concomitant of uterine pain, may kill at once; and such as in some might be rounded up with a mere fainting fit, might in others end in "the sleep that knows no waking." Hence, I make no rash averment when I say that the accoucheur arrives too late for any real service to the mother. He has to deal solely with effects. Again: May I not affirm that if the mother has to die, she must die early; if she is to live, she must rally promptly? But, happily, the haemorrhage is mostly intermittent, and that, too, irregular as regards periodicity, and the swooning in a measure compensatory. At all events, I have had only that experience. My memory can only recall at the utmost four cases, and these did not certainly belong to the order of centrical implantation.

According to some statistics, the frequency of placenta praevia as a complicating factor in obstetrics being one in five hundred cases, this admission on my part cannot be much of a cause of wonderment. The watch-word, "Deliver at all hazards," seemed in the days of my pupilage to have

been passed all along the lines of the profession. It was current in all the schools, the haemorrhage was described in dramatic terms, and the accoucheur was weighted down with an awful sense of his responsibility. "Haste, haste!" was the counsel hoarsely whispered into his ear. Guillemin, Mauriceau, Levret, Rigby, Denman, Ingleby, and Churchill all advocated the speedy evacuation of the uterus, with little, if any, qualifying restrictions. But, in justice, I cheerfully credit to Mauriceau the subsequent modification of his practice by rupturing of the membranes, since he found that "in some cases of partial placental presentation, the evacuation of the liquor amnii was enough to arrest the haemorrhage."

It was reserved for Barnes to give the most rational view of some of the procedures to be adopted. He pointed out the following facts: That the ovum growing in an improper habitat had an excess of development over the cervix; that the severance of the placenta could never go beyond the cervical zone; and that the hyperaemia of the placenta at the menstrual nisus was one and a leading cause of the breaking away from the attachments. His practice in the light of these views was conservative, virtually expectant. He maintained that the hand, introduced for the purpose of scooping away the placenta, might as well be used in turning; that the shock was no more severe.

Let us concede the imminence of the foetal death, since no interference is likely to be sufficiently speedy to avert it. The os uteri must be dilated as the preliminary to any procedure, or, to state it more definitely, the attendant must be encouraged by its dilatability. But here a difficulty obtrudes itself, as the cervix, owing to increased vascularity, will not yield to coaxing. All this while, therefore, the foetal life is in imminent jeopardy, and the mother cannot be supposed to be proof against the shock of over-interference. In this placental complication, where an early diagnosis and decisive treatment may be essential to one or both lives, no invariable rules can be given. In certain instances the tampon may suffice, perhaps be really superfluous, and so there

need be no parleying with our anxieties. Quiet, by way of prophylaxis against future recurrences of the haemorrhage, may complete the routine of treatment, certainly without the useless reliance upon astringents administered *per os*. The foetal head may itself act as a tampon, the liquor amnii having been evacuated and uterine contractions having thereby been excited.

Much undue stress, in my opinion, has been laid upon the dangers of version. This expedient may be resorted to when the foetus is viable, as certified to by the usual auscultatory signs, but the absence of bruits or pulsations should not, in the fullest sense, have a negative significance. The inability to detect should not be assumed as a proof of non-presence. It has been stated that the operation of turning in these cases is easy where the uterine contractions are next to *nil*, unless goaded on to action by extraneous stimulation, and where the uterine fibre is rather flabby. Of this, I am free to say that my own limited clinical experience is a practical endorsement of the truth of the assertion.

With the antisepsis and the anaesthesia of the present day, we have not the same difficulties with which to contend as did our forefathers. "In cases where the os uteri has been dilated for many hours, sufficiently to admit of turning," says W. Tyler Smith, "and blood or strength has been lost in the interim, we should blame not the operation, but the delay, for a great proportion of the fatality to the mother and child." This warning all are ready to echo.

Before coming to definite conclusions, statistics should be thoroughly sifted in order to eliminate errors of diagnosis, assignments of wrongful causes, and unintentional exaggerations. The appalling catastrophes of the obstetric chamber tempt to extenuation in the one direction of futile and thoroughly exhausted obstetric art. Account must also be taken of prolapsed funes and abnormal presentations in general, intermittent drains of previous placental haemorrhages, imperfect development of the lower uterine segment as involved in this phenomenon, puerperal sequelae, now somewhat con-

trollable by absolute cleanliness, premature and feeble labors, and moribund cases in general. The detailed examination of the statistics with judicial calmness does not come within the scope of this paper; indeed, approximations to the truth are hardly to be expected. The picture is sombre enough, without any more shaded tints; it needs a little more warmth of coloring.

In conclusion, and in consonance with a growing custom, as provided for in discussions of this nature, I venture to present certain points for future study.

1. The mortality of placenta praevia being, to the foetus, somewhat in excess over that of the mother, the efforts of the accoucheur should be directed to the safety of the former.

2. The best chances of the mother are in the line of parturition.

3. In a given number of cases of cervico-lateral attachment, haemorrhage may cease spontaneously, or may be arrested, by Barnes's method of digital detachment.

4. Labor induced by the escape of the liquor amnii may be expeditious enough to end in delivery with safety to both mother and child.

5. Dilatability of the cervix uteri is a *sine qua non* for any procedure.

6. To diminish the chances of mortality for a viable child, version should be considered as an early expedient.

7. Version under proper restrictions is not of necessity dangerous to the mother, while delay may utterly destroy the chances of the child. Delivery by forceps is often a choice between expedients.

8. What best promotes the interests of the foetus also does that of the mother; in other words, the interests of both in no sense conflict.

QUESTION V.

AFTER CHILD-BIRTH, IN PLACENTA PRAEVIA, WHAT THERAPEUTICAL MEASURES WILL MOST CERTAINLY GUARD AGAINST THE DANGERS OF HAEMORRHAGE AND SEPTIC INFECTION?

Discussed by

JOHN G. ORTON, M. D., of Broome County.
WILLIAM H. ROBB, M. D., of Montgomery County.

DR. JOHN G. ORTON.

In attempting to answer this important question, I am constrained, in view of the few remaining hours of this session, simply to present to you the statistics of my entire professional experience of thirty-five years. You will be equally gratified, I am sure, with myself, that the list is very short indeed; that it is comprised within the compass of two typical cases.

Allow me, then, briefly to report them, as they fully illustrate my own views of what efficient therapeutical measures may be used to arrest the post-partem haemorrhage, and save the life of the patient.

CASE I. Mrs. B., aged forty, of a nervous-sanguine temperament, medium size, weighing about 125 pounds; the mother of three children.

I was summoned to visit this lady, who lived three miles from my office, with the injunction to hurry, as she was flooding. On arrival at the house, I found a woman on a bed literally saturated with blood, which was streaming through to the floor beneath. She was simply gasping, and apparently dying. No pulse could be found at the wrist; she was unable to speak—in fact, unconscious.

The physician in attendance, a very competent one, hurriedly informed

me that placenta praevia had existed; that the child was born and dead; and that the placenta had been removed. No uterine contractions had taken place since delivery, about twenty minutes since. I immediately made compression with the points of my fingers upon the abdominal aorta, and the bleeding was under control at once. Giving the patient two drachms of Squibb's fluid ext. of ergot, I introduced my left hand into the uterus;—it was flabby—a complete case of uterine inertia. Removing the large mass of accumulated clots, I curetted the entire uterine surface with my finger nails, and soon had the extreme satisfaction of recognising the return of contractions, and a life saved. The control of the haemorrhage by compression of the aorta was the only means at my command to rescue my patient from immediate death. No time was to be lost and none to be gained by any measure short of shutting down the flood-gate. This done, I had several alternatives to induce uterine contractions. The use of ergot in large doses, and the scratching of the uterine walls with my finger nails, soon accomplished all that could be desired. The patient made a good recovery.

CASE II. Mrs. L., aged twenty-six, a small-built, phlegmatic individual, weighing about 110 pounds; the mother of one child.

I found this patient, at the eighth month of gestation, having some uterine haemorrhage. The os uteri at that time was slightly dilated and patulous. Rest in bed and a dose of opium soon caused the trouble to cease. It reappeared, however, several times, and yet not to any alarming extent. There was no time when I could decide by examination that there was an abnormal implantation of the placenta.

At full term I attended this lady, and under peculiar circumstances. Happening to be passing her house, I heard a loud groan, and on entering found her on a bed and in labor pain, and with each pain flooding freely. On making an examination, I found it a case of placenta praevia centralis. Her husband was absent; no nurse, not even a child in the house, and neighbors living at some distance beyond call. I could not safely leave her to obtain assistance, and, of course, had neither forceps nor ergot with me. A physician is rarely placed under more embarrassing circumstances. Thus left to my own resources, I proceded to separate the placenta with my two fingers, the os uteri being dilated to about the size of a half dollar, and not rigid. When about one half had been detached, the membrane came down and protruded; puncturing this, active contractions rapidly pressed down the head, and the haemorrhage ceased. The case then progressed in the usual way, and terminated in the delivery of a ten-pound living child. But here, again, trouble began in earnest; no uterine contractions whatever, and blood flowing in torrents. Passing my hand into the uterus, I peeled off the remaining portion of the placenta, and removed it from the body. My patient had by this time passed into the stage of syncope, simply gasping, and pale

as death. Again entering the uterine cavity, I curetted the surface with my finger nails, and in the absence of ergot made light friction over the breasts with my other hand. Active contractions soon ensued; my hand was expelled from the uterus, and all was well and safe with the patient, who made a satisfactory recovery in due time.

The special lesson of this case, to which I would call attention in the therapeutics of placent praevia followed by haemorrhage after delivery, is in the expedients used to induce uterine contractions, namely, curetting the bleeding surface of the uterus, and friction over the breasts. I feel sure that I have saved the life of more than one woman in cases of uterine haemorrhages by the simple use of slight friction over the nipples. Especially is it worth while to remember this measure when ergot is not at hand, or fails to produce its specific effect.

In fact, I am willing to say, as the result of my experience, that if compelled to choose between these two uterine contracting agents, I should select the friction. It has two important qualities: it is a remedy always within reach, and is certainly more prompt in its effect upon the uterus.

After all, it is not to be denied that the most efficient and prerequisite measures in cases of post-partem haemorrhage are a cool head, careful consideration, mature judgment, prompt action, and never for one moment to allow oneself to become disconcerted, no matter what the provocation.

The literature upon the therapeutics of this question I shall not attempt at this time to reproduce. It is too well known to the Fellows of this Association.

As to septic infection, it can hardly be denied that careful removal of all clots, due regard to cleanliness of the parts, and a daily washing out of the vagina with carbolic acid solution will be the measures most surely adequate to prevent its occurrence.

DR. WM. H. ROBB.

After labor is completed in cases of placenta praevia the danger to the mother is not always over. The excessive loss of blood in many cases imperils her life at once. In a few

cases the haemorrhage ceases with the labor. The extreme anaemia which follows certainly exposes her to the dangers of inertia of the womb, and later to septic poisoning. The increased development of the vascular system in the lower segment of the uterus exposes the woman to the dangers of laceration of the cervix, as well as to increase the frequency of septicaemia. With these facts before us, we are asked, in Question V, "After child-birth in placenta praevia, what therapeutical measures will most certainly guard against the dangers of haemorrhage and septic infection?"

The position of the woman will doubtless be very essential. Pillows and bolster should at once be removed from under her head, and the foot of her bed elevated by the use of bricks, books, or any other convenient articles. The next and most essential point in preventing uterine haemorrhage is to secure firm and constant contractions of the uterine walls. For this purpose we should at once give a hypodermic injection of fifty minims of Squibb's fluid extract of ergot. This should be followed immediately by giving hypodermically fifty minims of brandy or ether. An injection under the skin of twenty minims of laudanum not only quiets the patient, but acts as a powerful stimulant in aiding the action of the above remedies. I have in a few cases used tincture of nux vomica, and apparently with the very best effect. These remedies will often stimulate the exhausted uterine muscles, and produce firm and continued contractions. The nurse or an assistant should be instructed to grasp the fundus and hold it firmly between both hands, so as to prevent further relaxation and haemorrhage. Gentle friction should be made, to encourage contractions of the womb. As soon as the hypoderms above mentioned have been administered, the attendant should relieve the nurse, and see for himself whether the uterus is contracted, or whether it is filled with blood. If any clot remains inside the cavity, it should be removed at once by the aid of one hand. The hand may be introduced into the womb for the purpose of making direct pressure over the mouths of the bleeding ves-

sels. This will help to check the haemorrhage, and the presence of the hand seems to act as a stimulant to excite uterine action.

I believe that the closed hand inside the uterus is a valuable aid in controlling the loss of blood in placenta praevia, and I think that direct compression of the enlarged cervical vessels is made in this way. All of these means should be used quietly, but as quickly as possible, and if they fail or but partially control the haemorrhage, I would advise the use of hot carbolised water thrown up into the womb. This, at a temperature of 110° F., will often stimulate uterine action. I have known contractions to follow almost instantly on its use. I have found an injection of compound tincture of iodine to excite contractions after failing to produce them with hot water. A small piece of ice will often operate in producing the same result, when it is carefully passed into the womb. Although I have used vinegar and lemon-juice for the same purpose, I have never succeeded in securing the same results with either of them. I believe the most efficient means of controlling haemorrhage in placenta praevia to be the judicious use of the faradic current. In two cases, after securing firm contractions by the means already mentioned, I was unable to retain them; relaxation and haemorrhage would occur as soon as pressure was removed from the fundus. In these cases the faradic current brought about the desired effect at once, and kept up the uterine action until by stimulants and tonics the patient had regained sufficient strength to impart tone to the exhausted womb. The action of the battery was continued in one of these cases for twelve hours, and in the other eight hours, before the hard and globular form of the organ was retained. I cannot too strongly urge the use of electricity in these desperate cases; I believe that it has been in my hands the means of saving several lives. It steps in, as it were, just when all other means fail. If haemorrhage continues after the womb is firmly contracted, I should suspect that injury had been done to the cervix, and should examine the parts by the aid of Sims's speculum. If

laceration exist, and the strength of the woman will permit, Emmet's operation should be done at once, and the parts restored; if she is too much exhausted, the bleeding vessels must be closed either by styptics, torsion, or the ligature, as the individual case may require.

To prevent later attacks of flooding, I would use the ergot in repeated doses, at first in small hypodermic injections, later in doses larger and at longer intervals. Sulphate of quinia in tonic doses, combined with nux vomica and iron, to be continued until the woman is fully restored. Stimulants, at first hypodermically, and later in quantities and at intervals to meet the indications for their use.

The diet at first should be liquid, given in small quantities, repeated at short intervals, and of the most nutritious nature; later, at longer intervals, and of plain and wholesome character.

To prevent septic infection, two indications have already been met, viz., emptying the uterus and producing firm and continued contractions. In cases of doubt, the curette should be used to rid the womb of any clot or placental fragment that might be retained. As a farther means to be used in the prevention of septic poisoning, I would urge the use of a single copious intra-uterine injection of hot carbolised water. I use it at the temperature of 110° F., and composed of one part of the acid to forty of water. I continue to use the soft rubber tube attached to a fountain syringe, as advised on a former occasion before this Association. With these tubes the uterine cavity can be thoroughly cleansed, and no injury can be done to the organ itself. After using the carbolised water as directed, a bacillus of iodoform, containing sixty grains, should be passed up into the cavity; as this gradually dissolves, the uterine cavity is rendered aseptic. Little more remains for us to do, aside from securing the necessary sanitary surroundings for our patient. I am sure that no one in this Association will in a single case neglect to give his patient the full advantage of thorough sanitation, including modern antiseptic treatment.

A CASE OF ACUTE MANIA FOLLOWING ARTICULAR RHEUMATISM.

By James C. Hannan, M. D., of Rensselaer County.

September 29, 1887.

So numerous and varied are the affections or agencies which from time to time disturb the habitation of human thought, from the slowest chemical process to the quickest electrical vibration, from the rude effects of physical force to the finest and most attenuated psychical influence, that a timid man may well hesitate before he enters so vast and so intricate an inclosure,—a *terra incognita*, where vanity and speculation play with him the part of harlequin until he loses himself amid the phenomena of physical, mental, and moral conditions. I claim not to belong to the inner circle; I am but a single worshipper at the shrine of science. I dare not profane her sanctuaries farther than to bring my offering to the doors of the temple, and content myself by remaining at a respectful distance from the sacred fire which consumes the dross and refines and purifies the essential elements of all that is good in man. I stand, as it were, gazing in through the portals of this great edifice; I behold the priests of Minerva Hygeia ministering at her altar, while at the same time I see the grim tyrant, in sable robes, standing in the background, with hollow orbits and ribs of death, laughing in horrid mockery at the feeble efforts of scientists in their exposition of nature's laws, and the exertions of the physician who attempts to change the order which governs the silent processes of growth and decay.

Hamlet asks, "Canst thou minister to a mind diseased?" I have tried it more than once, and signally failed! Not long

since I was brought face to face with a malady which sent me out to sea with a broken rudder; and with your permission I will now relate it:

The subject of my experience was a young man seventeen years of age, remarkably well grown for his years. He measured about 5 feet 10 inches, and weighed about 145 pounds. His complexion was dark; black hair, black eyes, large bones, tough of constitution; such a frame, in fine, as one would suppose might be capable of any amount of endurance. He was fond of athletic exercises, cheerful of disposition, and an excellent student. Some three years before, he had applied to me for a remedy for a "bad cold." He complained of general weakness and lack of spirit; became somewhat round-shouldered, and so cadaverous that his friends and neighbors hinted that he was "fast going into consumption." I then subjected him to a physical examination, with the following results: On inspection, I noticed some flatness of the chest walls, but the respiratory signs seemed to be normal with the exception of slight dulness in the right clavicular region. The percussion note was not so clear as in the corresponding space on the opposite side. The signs furnished by auscultation were a little more decided. I discovered some rude respiration and a few rales in the right lung, just sufficient to mar the rhythm of the respiratory murmur, and no more. His evident loss of youthful vigor, his cough, expectoration, and general appearance, forced me to suspect a developing tuberculosis; and I brought my batteries to bear upon him after the manner of the schools. The result was that the cough and expectoration diminished, whether by the aid of such weapons as morphia, cyanide of potassium, ipecac, hypophosphites, etc., I know not (they got the credit, however); and I poured volley after volley of tonics and stimulants into him until he began to grow erect, and as his appetite improved he consumed more and more food.

He went regularly to school, had a good memory, and learned fast. He possessed many excellent qualities of head and heart; friendly in his intercourse with all those with whom he was brought in contact, and faithful to a fault. His filial duties toward his widowed mother were all that could be desired in a son. His moral character was beyond reproach, and although religiously inclined he was full of buoyant spirits, and freely indulged in the sports common to boys of his age. The summer before his death, he accompanied a gentleman and his family to their farm in New Hampshire, where he worked in the fields during the summer months, and returned in the fall looking remarkably well. He called, in a day or two, to inform me that he "never felt better in his life."

He again resumed school, and made rapid progress in his studies, when, in March, he began to droop, cough a little, and again applied for

assistance. I examined him once more, but found nothing of importance enough to arouse my fears; but to give him the benefit of the doubt I began once more my administration of tonics and alteratives, and directed him to leave school and to take moderate exercise in the open air. He did as requested, and appeared to be doing well for some five or six weeks, when a change took place: he began to cough more and complain of weakness, and I was again summoned to his home. I now asked him to remove some of his clothing, in order to give him another examination, when suddenly he fell into a fainting fit, fearing that I might find something detrimental to his life. I proceeded no farther with my investigations on that day, and left the house, asking him to call at my office in a day or two.

A few days after this event, I was sent for again, when to my surprise I found him with a swelled and painful knee joint. He said that he had not hurt it in any way; and as he had no marked febrile symptoms to awaken suspicion of a constitutional disease, I queried with myself whether he was developing synovitis, or some other inflammatory disease of the joint. I prescribed a saline cathartic, and hot fomentations to the part, which were continued with pleasing effect until my eyes were opened to a similar affection in the other knee, the pain and swelling passing rapidly and with greater disturbance to the upper extremities. I at once placed him under the salicylic acid and borax treatment, and to his great relief and my satisfaction all symptoms of rheumatism left him in about eight days, when he desired to get up and put his clothes on. That privilege being allowed, he once more took his place within the family circle, feeling quite comfortable.

After two days his mother called to say that Arthur had not slept the previous night, but refused to have me sent for, claiming that he was all right, and wanted to go out. I told my anxious messenger that I would call upon him in about an hour, as if by accident, which I did; and when I entered the room I found him reclining on a sofa, and for the first time I found that I was not welcome. I asked him how he was getting along. He answered, "Oh! pretty well," and inquired if he might go out for a walk. I noticed a strange and unnatural expression about his eyes, and a nervous twitching of some of the facial muscles, particularly the depressor anguli oris, which drew the angle of the mouth spasmodically backward. I also noticed a slight and peculiar defect of speech, or a forced effort to enunciate distinctly. He also exhibited a few jactitations of the limbs while I watched him. I then said, "Arthur, if you were a girl I should think you were developing hysteria, although boys are occasionally subject to such a disease; or you may perhaps be in the beginning of chorea." This announcement irritated him a little, and I gave him an anti-spasmodic, and left directions for its use. I took my departure, not satisfied, however, with my knowledge of the condition

of things, and made a call two miles away. On my return, I was sent for again in great haste.

His mother had stepped out for a short time, and when she returned she found her son tossing and tumbling like a first-class acrobat or contortionist, but with a great deal more violence and less method. Help was called for, and it took the united efforts of three men to restrain him from injuring himself and breaking everything in the room. He made a raid on the mirror of his bureau, and a dash at the window, as if he would like to go through it. He reproached his mother and myself for mesmerising him; accused me of having a battery up my sleeve; and refused both medicine and nourishment on the ground of our smuggling poison into them. Reason and persuasion were valueless in trying to convince him of the necessity of taking both, so that my only resource was chloroform by forcible inhalations, half an ounce of which put him to sleep. When the influence of this powerful agent died away, he awoke as violent and as ungovernable as ever. He talked rapidly and at random, and struggled hard to free himself from the firm grasp of his keepers. He called for his Bible, and made everybody affirm the truth of his statement. He wished to be at liberty, so that he might visit his friends in Massachusetts and Vermont, and desired to take part in the execution of wild and visionary projects. He recognised his friends and neighbors, and extended to them a cordial greeting on their approach. His memory remained intact, and he seemed pleased at the recollection of any incident within the cycle of his social knowledge, or the recital of some boyish caper connected with school-life. He complained of no pain either in his head or spine; had no chill, no soreness of the muscles, nor tenderness of the abdominal organs. His respirations were perfectly normal; pulse regular, and of fair volume; temperature but slightly elevated; passed the usual quantity of urine, which had no alkaline reaction, with a specific gravity varying from 1020 to 1030. It became turbid when subjected to the boiling test, but cleared up on the addition of a few drops of nitric acid, showing earthy phosphates to be the cause of its cloudy appearance. His paroxysms of frenzy came on suddenly about every ten minutes, during which he had no control over his actions. He raved incessantly; assumed all shapes and positions, exhibiting enormous strength in his blind and aimless fury. It took the united efforts of two men to keep him in bed, where he thrashed and talked and tried to overcome his attendants.

I now told his friends that he was suffering from an attack of acute mania, and suggested to have him sent to an asylum. The family not being favorable to such a course, I called for a consultation, and at my suggestion Dr. William Watkins Seymour, of Troy, was sent for. This gentleman soon arrived, and made a thorough examination, which was negative in its results as far as the physical exploration was concerned.

He discovered no local lesions, aside from anaesthesia of the lower extremities. Ophthalmoscopic inspection detected no difficulty with the optic nerve or its adjacent tissues. He finally sustained my diagnosis of acute mania.

About the fifth day, returning reason began to assert itself, and the patient commenced to take moderate quantities of food, offered no objections to his medicine, and the family fondly and eagerly hoped the disease was passing away. But such expectations were of short duration; dark and gloomy forebodings took the place of happy anticipations as a fresh and furious outbreak of maniacal excitement set in, accompanied by tumultuous clonic movements, which was kept up at intervals of from ten to twenty minutes, despite the power of chloral hydrate, opium, valerianate of ammonia, hyoscyamus, the bromides, and other powerful antispasmodics. Our only hope lay in the controlling influence of chloroform, to which ever and anon we were compelled to have recourse. For three days prior to his death he had an attack of ataxic aphasia, showing paralysis of the muscles of the tongue in a marked degree, so that it was with much difficulty he could be understood. During this period I noticed that one of his feet and one arm presented a swollen condition without oedema, which disappeared in two days. A somewhat similar condition, accompanied with paralysis, was noticed in the upper and lower extremity of the left side during the period of his repose; but at the moment of exaltation they seemed as active as ever. The paroxysms now became less frequent, but more intense in character; the patient became more weak and exhausted between the spasms; and he died quietly on the 21st of April, just eleven days from his first attack of insanity.

I asked for a post-mortem examination, for the reason that I had some misgivings as to the exact nature of the malady, and to satisfy the friends of the deceased, some suspicions being thrown out as to the correctness of my diagnosis. Having been taken sick myself, and confined to bed for two days during my patient's illness, I requested the family to send for a neighboring practitioner in my absence, which they did; and that gentleman, in direct violation of medical ethics, openly pronounced the case to be one of spinal meningitis, and prescribed accordingly. His remedies, however, had no effect in quieting the patient.

My request for a necropsy being granted, I telegraphed to Dr. Seymour, who kindly responded, bringing Dr. Gaudin, of Troy, with him. As the body was exposed, it showed very great emaciation. The calvaria being now removed, we found very little of importance in the membranes. The surface of the hemispheres, however, was altered, the net-work of vessels being greatly distended, the most attenuated capillaries being perfectly visible and well outlined. The convolutions around the middle portion of the longitudinal fissure were a little softened, with a few

specks of a whitish deposit along its margin, but to a very limited extent. These points or patches were crescentic in form, the largest of them about the size of a small pin-head. On slicing the hemispheres, the gray and white substances were clearly defined, and in proper relation with each other. My consulting surgeon thought the cut surfaces showed more bloody points than natural; but I must confess that I was not of that opinion;—not that I would dispute his pathological knowledge on such a topic, as his observations and opportunities have been far more extensive and varied than those which have fallen to my lot. According to my superficial observation, I must say that I discovered not enough of broken down or altered tissue in the hemispheres to cause disturbance such as would lead to the terrible suffering and death of this young man. The under surface of the hemispheres was perfectly healthy; so were the medulla, the cord, and its membranes.

After examining the brain of this young man, I resolved to make a farther search, and opened the thorax and abdominal cavities, to find all the organs, in their respective places, free from disease, except the right lung, in which I found quite a number of miliary tubercles scattered here and there through its apex.

This terminated my investigations; and yet remained the query, What killed this young man? In a few days I received a letter from Dr. Seymour, in which he quotes "Savage on Brain Lesions," produced by rheumatism and the development of other local inflammations within the body.

I have not read anything from the pen of Dr. Savage; but I have consulted the very able treatise on "Rheumatism" by Dr. Fuller, of London, in which he says "that cerebral disturbance is not always symptomatic of brain inflammations, and that a patient suffering from acute rheumatism may pass into a state of violent delirium and die comatose or convulsed, although on dissection neither the brain nor its membranes presents the slightest trace of inflammatory action. Nay, more: it has been proved beyond dispute, that although in some rare instances the symptoms alluded to *do indicate* inflammation of the brain or its meninges, yet such is very rarely the case. More generally, they are coincident with inflammatory action about the heart, and unconnected with any cerebral lesion; they frequently accompany pleuritis or

pneumonia, and that to an alarming extent, when neither the brain nor the heart is affected."

Was I correct in calling my case "acute mania"? or was the mania due to the rheumatism by a metastatis? or was this severe struggle a protest by the sensorium against the invasion of its blood-supply?

There are many who hold to the doctrine that brain disturbance is due to the anatomical relations of the heart with the cerebrum, the irritation being conveyed by the former to the latter through the medium of the phrenic and pneumogastric nerves; but in the case before us there was no embarrassment about the central organ of the circulation, as far as I could discover, to warrant any such disturbance.

Griesinger, in his "Pathological Anatomy of the Brain," argues that advancing tuberculosis, prolonged excesses, and the like, give rise to a course of acute mania. In my patient's case, as far as I could learn of his moral character, and from my own personal knowledge, seeing him almost every day, I am not willing to accept any depraved habit as a predisposing cause. The autopsy had put aside the idea of meningitis, and the very slight lesions found on the convexity of the cerebrum were not at all commensurate with the severity of the brain symptoms. That there was a condition of anaemia existing in the patient is beyond question; but how far this moderate reduction of vitality contributed to the maniacal stage, I am not prepared to say.

Again: Most mental pathologists tell us that pure mania follows other mental derangements, such as partial dementia before or after the excitement, or shock where the strain on a finely organized system is great. Such sensitive souls give full swing to their emotions, and become the butt and sport of psychical influences: hence the number of insane from love, hatred, fear, grief, loss of friends, home, fortune, and kindred. Our patient had no such motives: he was seized after a short period of general malaise, succeeding a brief visitation of articular rheumatism, which lasted about eight days. Neither was I as satisfied of the cause or causes of

death as Dr. Seymour; the abnormal conditions were not, in my opinion, in proportion to the final result. I fear that this and similar cases will ever remain a source of doubt and perplexity to mental pathologists.

Our mental anatomists talk learnedly of the seat, causation, mode of action, deviations, and analogies of intellectual disturbance;—how one form of insanity leads to melancholia or dementia, another to crime or suicide; one arising directly, another indirectly; here a poor fellow becomes a raving maniac, with murderous propensities, while there another assumes the idiotic type, quiet and harmless; one fancies himself as rich as Croesus, although as poor as an Irish tenant at will; another is crazed with piety, and his time is constantly devoted to beads, prayer-books, and Bibles; a third imagines himself king of the jungle, while a fourth shrinks in terror from his own shadow; some possess the might of the All-powerful, and believe themselves capable of moving mountains, while others imagine their bodies to be the abodes of divers kinds of demons, by whose diabolical antics they are tormented day and night. If we add to the list the anomalies of thought and sentiment, sensation and movement, we have a complex system as intricate and phenomenal as the milky way.

In conclusion, I would ask to what class of nervous phenomena this case should be assigned. What means, if any, could have restored the "widow's son"?

A CASE OF INTRA-RECTAL LARVAE, WITH GASTRITIS, IN AN INFANT.

By CHARLES S. ALLEN, M. D., of Rensselaer County.

September 29, 1887.

I take this opportunity to introduce for consideration one of the most peculiar cases that has come to my notice during an active practice of thirty-seven years. It is possible that similar instances may have occurred, but I am not aware of any having been recorded. The notes were taken by my son, Dr. Wm. L. Allen, who is associated with me in practice.

On the 15th of June, 1886, we were called to attend an infant daughter of Mr. G. L. W. The child had been suddenly attacked with excessive vomiting, attended with diarrhoea. The mother informed us that she thought there had been as many as fifty stools in the day, in addition to frequent vomitings.

When five weeks of age, the patient had a severe attack of congestion of the lungs, with violent cough, through which it barely lived. For want of natural lactation, pure, fresh cow's milk had been given, diluted, for some time before this illness. As is often the case with a "bottle baby," the child was of delicate organisation, and showed marked evidences of exhaustion, leading us to fear that we had to deal with a severe seizure of cholera infantum. Warm flannels were applied to the epigastrium and limbs, and pepsin and subnitrate of bismuth were prescribed in three-grain doses, to be given frequently to allay vomiting, with an enema of cold boiled starch and tr. opii, to be repeated in three or four hours, if necessary. The stools had become dysenteric, with tenesmus and tormina.

On our next visit, we found the little patient somewhat relieved from the pain and vomiting, but not so much as we had expected. Discovering that the syringe used was defective, another was procured, and the starch enema repeated. This produced a better effect. We advised a change of diet to Nestle's food, and, thinking that possibly the milk might be at fault, recommended that it be thoroughly boiled before use. This was done, and when we again saw the case the vomiting had partially abated, and the number of the stools was reduced to one half. The

vomiting recurring, however, we altered the diet to condensed milk, and, in alternation with the pepsin and bismuth, prescribed small doses of calomel.

Our attention was attracted to the character of the excreta, which had just been removed in our presence, and we discovered living objects, the movements of which were not wriggling, like those of ascarides, but up and down, like those of a caterpillar. The Nestle's food having been in use only a day, and thoroughly cooked, we could not ascribe to it the existence of these parasites, and were at a loss to understand their nature or origin. We therefore had the napkin containing the stool sent to our office for farther investigation. Some of the creatures were carefully washed from the stool, and placed by my son under the microscope. We concluded that they were the larvae of the "blow-fly," and on comparing them with those deposited on some meat which was exposed for the purpose found them apparently identical.

Having, as I believed, ascertained the character of the objects before us, I suggested the use of carbolic acid in an enema with starch, which, to our astonishment, brought away a teaspoonful of living larvae. The stools now became more natural. The condensed milk and pepsin were continued, but slight hopes of the child's recovery were entertained, as the disease had lasted for nine days. On the tenth day, my son found diffused aphthae extending over the entire buccal mucous membrane. The child refused to take the bottle, and the surface of the body presented purple ecchymoses resembling purpura. The patient died on the tenth day. No autopsy was made.

In reviewing this interesting case, the question naturally arises, How could these larvae possibly have found their habitat in the rectum? It was the season of the year when flies abound; and the known persistence of the "blow-fly" in seeking a place to deposit its eggs may have led it to select unobserved the nipple of the bottle, or perhaps the milk, the larvae thus passing with the food into the alimentary canal, and giving rise to the gastritis and subsequent dysenteric irritation. That they were the larvae of the "blow-fly" I regard as proven by the microscope; and as we cannot accept the theory of spontaneous generation, they must have been deposited in the milk or some extraneous substance, and carried into the intestinal tract. May not this case throw some light on other similar ones occurring during the hot season in hand-fed infants?

TWO CASES OF EPITHELIOMA OF THE LABIUM MAJUS.—OPERATION AND RECOVERY.

By Thomas H. Manley, M. D., of New York County.

September 29, 1887.

From all that I can ascertain through inquiry and consulting authorities, I am led to believe that carcinoma of the external genitals in the female is a very rare affection. I find no mention of it in the works of American authors. Thomas and Emmett pass over the subject in silence, and treatises on general surgery have nothing on it. I am satisfied, however, that it cannot be so very rare a malady, for during the past five years I have met with and operated on two cases. Both were genuine cases of epithelioma of the labia majora, each undergoing the well known processes of cancerous disease, those of development and destruction. In both the diagnosis was verified by microscopic examination of the diseased structures. In both we had the usual characteristic symptoms of all cancerous growths,—the constant agonizing pain, emaciation, the brownish-yellow color of the skin; and in each the growth commenced at its favorite point of selection, the junction of the cutaneous with a mucous surface. In neither was there any history of hereditary influence, or of origin in irritation. The morbid action began superficially, and worked down into and through the deeper tissues. One patient was sixty-three years of age, the other was past the menopause, forty-seven years of age. Both were widows, who had large families.

The elder woman, Mrs. S., first noticed a small, painful swelling in the outer side of the left labium, about ten months before the operation. It at first gave her little or no inconvenience, though during the night she would have an aching sensation in the hip of the left side. After a time the swelling increased in size, gradually extending upward and outward,

becoming harder to the touch, and decidedly more painful. The pain now assumed a more severe character, remaining more constant, so that she had no ease, whether moving about or lying down. As she described it, she got no rest, "the pain was of a hot, shooting character, extending into the hip joint and down the limb," and she now noticed a peculiar throbbing sensation when the pain was very intense. The appetite was gone, and, as time advanced, the ravaging effects of the disease began to tell on her health.

After trying in vain all the usual old women's cures, washes, salves, and poultices, when, as she said, the swelling broke and began to discharge (the time she expected relief), the agony was much worse than before. Now and then the sore would bleed, at times quite copiously; once to a dangerous extent. As she had very little faith in medical men, she delayed calling professional aid till this stage of her malady.

The first physician who saw her applied a solution of cocaine, and, after benumbing the parts, snipped off a bit for examination. In the meantime he ordered that soothing remedies be applied, etc. After a few days he informed her that her disease was incurable; that owing to the chances of constitutional infection, the extent of the growth, and her advanced age, nothing could be done; but said that with the judicious use of cocaine she would secure more or less relief. This terminated his connection with the case.

She found that the four per cent. solution gave her great relief for a few weeks, but after this it had to be applied more liberally to get any effect at all. She was now advised to go to an institution in New York city known as the Women's College and Hospital. Here, again, a shaving was cut from the growth, with the same result, *i. e.*, the disease was declared malignant, but not necessarily fatal. In this hospital they undertook to reach the disease by constitutional treatment, on the homoeopathic method, and of course, as might be expected, without any benefit whatever. They kept her three weeks, and sent her home much the same as she left it, except that she was much weaker.

During the middle of last May I was requested to see, as they said, "an old woman whose stomach was falling out through the groin, and could not be got back." I found an old woman, very greatly emaciated, with sunken eyes and pinched features, whose expression bore evidence of her having suffered terrible pain. She was very feeble from want of sleep and food. The only temporary relief she now got was from drinking freely of rye whiskey, which she said gave her spirit and seemed to moderate the torturing pain. The cocaine she still applied, and she stated that up to that time she had expended more than a hundred dollars for the drug since she commenced its use. Now, to get even temporary ease, she was obliged to apply an ounce of four per cent. solution in one night.

I exposed the parts, and found the skin hanging in loose folds on the abdomen, something like that condition seen in advanced stages of phthisis. A cancerous growth occupied the left lip at the vaginal outlet, covering its whole area, and extending outward about one or two lines, on to the cutaneous tissues of the groin. Its centre was broken down, leaving an ulcerating opening, through which escaped the characteristic foetid discharge of the disease. Its borders were hard, cartilaginous, the sides and base of a gray, ashy color, exceedingly sensitive to the touch on exposure to air: in a word, it was a case of epithelial cancer of the labium, in its ulcerative stage. The process of breaking down was well established, and the systemic "breaking up" was keeping well apace with the local affection.

The question now to decide was simply this: Should I let her wear out with pain, or should I hazard an operation? If I could safely remove the growth, how was I to fill in the immense chasm left, as it occupied a large extent of tissue? Could the woman stand the shock? and if she did, would not the growth soon reäppear here or somewhere else? I found, on careful examination, that my patient, though old, was free from any organic trouble, had always enjoyed good health, and if free from this exhausting malady might be as well as ever. What I hesitated about the most was the question of her being able to bear loss of blood and survive the operation, and whether I could devise any means of filling the large space left by the growth removed. I fully and candidly advised her that there was considerable risk in the operation; that she might die on the table; but that I hoped with the application of judicious measures to very materially reduce the danger.

She clamored for an operation, and manifested more courage than any one I ever saw on the eve of a very serious procedure. "Anything, anything," she exclaimed, "which will relieve me of this misery!" I decided, without consultation, to operate, and shoulder the blame alone if it turned out badly. As I had decided to cut, I also devised a way of covering in the opening left.

The following day, assisted by Drs. Lawler and Williamson, of the Harlem hospital, after giving the old lady a drink of two or three ounces of whiskey, she was anaesthetised with ether, taking care not to push the ether, and hoping to be able to operate without inducing full anaesthesia. I operated quickly, making an elliptical incision, carrying the edge of the knife wide of the growth in a slanting direction, with a view of including, if possible, at the base all the diseased tissue. After completely encircling the mass by my incision, I commenced to dissect out the growth first with the edge of the scalpel, but as I went down I gouged out the body of the tumor with its handle. By this the haemorrhage was very much lessened. I went down to the bare muscular sheath before the diseased mass was turned out, having removed everything which had a

suspicious appearance. The haemorrhage was but slight, and was easily controlled by the torsion forceps alone, without the aid of ligatures.

Now, with regard to closing the wound. I arranged for this by denuding the opposite labium its whole length, leaving only a small part free at the fourchette, through which the urine might escape when the wound was closed. I next passed in deeply strong wire suture, bringing the surface whence the tumor had been removed into close apposition with the denuded labium of the opposite side. I found after the silver wire was twisted that there was not undue tension, as one might expect. The integuments in the neighborhood of the wound were not at all strained, and there seemed no reason why we should not get primary union. The whole ostium vaginae was completely and firmly closed, except the opening left below, the size of a crow-quill. The usual antiseptic dressings were applied. The woman rallied well from the ether, and when restored to her senses declared that for the first time in nearly a year she felt entire relief from pain.

On the fourth day the dressings were removed. Union was found perfect throughout. The wound, as do most wounds made in removing cancerous tissue, healed very rapidly, so that in two weeks from the time of the operation she was out of bed for the first time in more than six months. She had a good appetite, slept soundly at night, and soon regained her former health and strength. She is now in perfect health.

My second case, Mary G., an inmate of the almshouse on Blackwell's Island; forty-seven years old. First noticed a swelling of the right labium something more than five months before I saw her. The growth presented the same general appearance as the preceding, but was not so large. In her case, as in that of the old woman, she told me that the dispensary physicians whom she had consulted informed her that the growth was malignant and could not be removed, and advised her to have nothing done.

The surface of the growth was covered with a gray, friable substance; broken down, necrosed tissue, exuding a foul-smelling, sanious matter. I promised her relief by operative measures, at least for a time. She readily consented, claiming that even a week's reprieve would more than compensate for the pain endured.

Accordingly, on the 12th of May, 1883, she was etherised, and the growth removed without accident. The wound was closed by bringing the internal border of the mucous membrane into close apposition with the external cutaneous surface, and firmly suturing them with silver wire. She rapidly recovered, the wound healing kindly from the outset. In one month from the time of operation she left the poor-house, returning to her old place in the laundry. I heard from her less than six months ago,—about four years after the operation,—when she reported herself in good health, with no return of the cancerous affection.

These cases have seemed to me to be of sufficient interest, both to the general practitioner and to the surgeon, to justify a report of them. In the first place, they exhibit cancer in a most unusual situation. Again: They demonstrate how much may be accomplished by operation, even in those advanced in years. It is interesting to note, too, that in neither was there any discoverable exciting cause. In the older patient my way of closing the wound by obliterating the vaginal outlet was quite successful, as a woman of her advanced age would probably have no farther use for this channel except to carry off the urine.

I have always believed that where a cancerous growth could be removed without danger to life it should be done. Both the above cases bear out well my convictions in that respect. The fact that it will return in the majority of cases has no bearing whatever on the case. I have two cases in mind, of men from whom I have removed epithelioma from the lower lip—one from a man eighty-one years old, more than five years ago. He still lives, with no return of the disease, and his gratitude to me is unbounded. The other, a man of forty-five, had a friable cauliflower growth, made up of epithelial elements, in the lower lip, removed three years ago. The success was immediate, and there has been no return as yet. I make this digression to sandwich in, as it were, these two cases to support my assertion that the scalpel should be freely used in dealing with every species of cancer.

The principal danger in connection with enucleation is haemorrhage. In operating, then, it is well to carefully decide beforehand the nature and extent of incision; and here I think the surgeon should cut quickly, and close at once the many bleeding points. If the edges of the wound can be closely approximated, then the ligature on the smaller vessels is needless, as the firm pressure of the suture alone will readily control all bleeding.

Many imagine, from the confusing nomenclature of cancer, that the epithelial variety is not malignant, in fact, that it is not true cancer; but this certainly is a fallacy, as it may, and

often does, assume fearful malignancy, especially when it originates in certain parts of the body where its course is speedily fatal and little can be done by art to arrest its progress. We all know how fickle and erratic cancerous growths are,—at times halting in the midst of their destructive march, and thus filling the patient with a delusive hope of recovery. And here is where the charlatan comes in, and no doubt often aids the unfortunate patient by giving him hope and encouragement; and here we see the wonderful and inexplicable effect of mind on matter, the temporary truce secured to the patient by mental influences.

I believe that no matter where the scourge may make its appearance, provided it can be reached by the knife, especially when near the external orifices of the body, the medical attendant should advise excision, either by his own hand, if sufficiently expert, or by the experienced surgeon. The main contraindications to removal are where the growth is of great extent, close to or involving a vital organ, or when there is some great risk of cutting life short by a procedure which is intended to prolong it. The question of the propriety of removing the uterus when cancer invades it has been much debated lately, but it must, indeed, be an operation seldom justified, as the shock from mutilation of the deep pelvic tissues is an element of great danger; and even if the patient survives the operation, it is a serious question whether, when we consider the almost certainty of its return, the result compensates for the risk taken.

Epitheliomatous growths may be as thoroughly removed by caustics as with the knife. I have used the acid nitrate of mercury in removing small warty growths from the face wtih the most gratifying success. It is a painful escharotic, hence must be employed with care, so as not to burn too deeply into sound tissues. Carbonate of lime has lately been much extolled by English surgeons for internal use in cancer, given in the form of incinerated oyster shells reduced to a fine powder. It is claimed for it that it often exercises a most salutary effect when given for a considerable time.

I have had an opportunity of trying it lately, in a case which is now under my care, in a middle-aged woman, in whom the entire cervix has been eaten off, and who was advised at the New York State Hospital for Women to have the entire womb removed by operation. She came to me before she would consent, and I advised against this procedure. I prescribed calcined oyster shells in teaspoonful doses, and within ten days she expressed herself as feeling much improved. The red glare of inflammatory action in the cervix had disappeared, the discharge was much moderated, and its odor was now hardly perceptible. The whole surface now shows a disposition to heal. From its beneficent action in this case I am inclined to believe that it possesses decidedly curative properties in cancer, and will accomplish much good if continued long enough.

My main object has been to invite the attention of my brethren to what appeared to be a very rare affection,—cancer of the vulva, or epithelioma of the labia majora,—and to a consideration of its treatment. I wished to emphasise that we should not "split hairs" on questions of diagnosis when the line of treatment is plain; that, return or no return, a carcinomatous growth, when productive of great pain, should always, when safe and practicable, be cut or gouged out, and that thereby we can at least prolong our patient's life for a time in peace and comfort.

PROCEEDINGS.

FOURTH ANNUAL MEETING

OF THE

NEW YORK STATE MEDICAL ASSOCIATION,

HELD AT THE HOTEL BRUNSWICK, FIFTH AVENUE AND 27TH STREET, NEW YORK CITY, SEPT. 27, 28, AND 29, 1887.

FIRST DAY, TUESDAY, SEPT. 27, 1887.—MORNING SESSION.

The Association was called to order at 10 o'clock A. M., by the PRESIDENT, Dr. ISAAC E. TAYLOR, of New York.

The SECRETARY announced that it would be impossible to give the number present from each district, as the registration was still in progress.

Dr. CHARLES A. LEALE, Chairman of the Committee of Arrangements, read the report of the Committee. (See page 17.)

Upon motion of Dr. FERGUSON the report of the Committee of Arrangements was accepted.

At the suggestion of the SECRETARY the order of business was changed to bring the remainder of the regular business of the session before the PRESIDENT'S Address.

Dr. E. D. FERGUSON, Secretary, then read the Annual Report of the Council. (See page 472.)

Upon motion of Dr. HOVEY, the report of the Council was accepted.

The annual reports of the Presidents of the Branch Associations, and of the New York County Medical Association, were read by title by the SECRETARY. (See pages 432–468.)

PRESIDENT TAYLOR then delivered the Annual Address to the Association. (See page 20.)

The SECRETARY announced the following Committee on Scientific Contributions:

Dr. E. M. LYON, Second District.
Dr. J. MORTIMER CRAWE, First District.
Dr. H. O. JEWETT, Third District.
Dr. W. D. GREENE, Fourth District.
Dr. S. B. WYLIE MCLEOD, Fifth District.

After the reading and discussion of the papers announced for the session, at the request of the PRESIDENT the members present from each district met for the appointment of members of the Nominating Committee.

The SECRETARY announced that the following members were appointed as the Nominating Committee:

Dr. J. W. S. GOULEY, at large.
First District, Dr. BYRON DEWITT, Dr. J. MORTIMER CRAWE.
Second District, Dr. JAMES FERGUSON, Dr. E. M. LYON.
Third District, Dr. H. D. DIDAMA, Dr. H. C. LYMAN.
Fourth District, Dr. B. L. HOVEY, Dr. U. C. LYNDE.
Fifth District, Dr. W. D. WOODEND, Dr. J. G. TRUAX.

Adjourned to 1:30 P. M.

AFTERNOON SESSION.

The Association was called to order at 2 o'clock P. M. by VICE-PRESIDENT AVERY.

The afternoon session was devoted to the discussion on Compound Dislocation of the Ankle Joint, and other papers.

SECOND DAY, WEDNESDAY, SEPT. 28, 1887.—MORNING SESSION.

The Association was called to order at 10 o'clock A. M. by PRESIDENT TAYLOR.

The reading and discussion of the papers were then taken up, according to the programme.

At the close of the address on Nosography by Dr. JOHN W. S. GOULEY, Dr. FERGUSON said he thought every one of the listeners to Dr. Gouley's paper felt that they would hardly like to undertake to discuss a paper where they would have to go through a system of Greek roots and Latin branches, but as Dr. Gouley had said that this was only a part of his paper, he arose to move that Dr. Gouley be requested to give the paper

to the Committee on Publication, so that in our leisure we might give it study.

The motion was seconded by Dr. CARROLL.

Dr. FERGUSON said before the resolution was put he would like to ask Dr. Gouley whether it would be gratifying to him to have a committee appointed to report on the subject at the next Annual Meeting, or whether he preferred to leave it as it is. If it was agreeable, he would be happy to embody the appointment of such a committee in his resolution asking for the entire paper for publication.

Dr. GOULEY said that of course he should not think of objecting to the appointment of a committee. That meant that his paper would be sure to be criticised, which was what he wanted. It was provisional, as all human knowledge must necessarily be, and the appointment of a committee would ensure the proper criticism of the paper. It should be thoroughly severe. Nosographers were always happy to be criticised, and criticised most thoroughly. If a committee were appointed who would take the trouble to read the paper, he was sure it would be a useful criticism, that would do good to the cause of nosography.

Dr. FERGUSON moved that Drs. Carroll, Moore, and Cronyn be appointed a committee, without limitation as to power to add to their number, to report on this matter at the next Annual Meeting, and that the address be printed in full.

Motion carried.

Adjourned to 1:30 P. M.

AFTERNOON SESSION.

The meeting was called to order at 1:30 o'clock P. M. by VICE-PRESIDENT COLVIN.

The session was devoted to a discussion on Typhoid Fever.

Dr. FERGUSON offered a resolution that the thanks of the Association be extended to Dr. Salmon for his interest in coming from Washington to participate in this discussion.

The resolution was adopted.

Adjourned to 8 o'clock P. M., at the Carnegie Laboratory.

EVENING SESSION.

The Association assembled at the Carnegie Laboratory at 8 o'clock P. M. The session was spent in the presentation and description of a number of very interesting pathological specimens by Drs. LEWIS A. SAYRE and F. S. DENNIS, and some specimens of the cultivation of the micro-organism of scarlet fever by Dr. GRAUER.

THIRD DAY, THURSDAY, SEPT. 29, 1887.—MORNING SESSION.

The Association was called to order at 9:30 o'clock by PRESIDENT TAYLOR.

The SECRETARY read the report of the meeting of the Council, held on the preceding evening. (See Annual Report of the Council, page 474.)

TREASURER'S REPORT.

JOHN H. HINTON, *Treasurer*,
In account with the New York State Medical Association.

From Nov. 16, 1886, to Sept. 27, 1887.

GENERAL FUND.

Receipts.

288 assessments,	$576.00	
429½ dues,	1,289.00	
36 initiation fees,	180.00	
Sale of Transactions,	25.00	
Subscription by Council for supper,	272.00	
Donation to Building Fund by Dr. J. W. Lockwood, of Philmont, N. Y.,	50.00	
Balance Nov. 16, 1886,	290.38	
		$2,682.38

Disbursements.

For Library expenses ordered by the Council,	$200.00	
Balance of rent for Lyric Hall,	65.00	
Hunting & Hammond for supper,	108.50	
Dr. E. D. Ferguson, Secretary, postage, express, &c.,	151.53	
Angell's printing-office,	110.09	
C. G. Crawford, 2,000 stamped envelopes,	47.00	
Appleton & Co., for sending out volumes,	23.56	
Dr. John P. Gray's portrait,	55 00	
Dr. Austin Flint, Sr.'s, portrait,	42.00	
Dr. F. H. Hamilton's portrait,	79.00	
County Clerk's office,	.06	
Republican Press Asso. for Vol. 3, Transactions,	1,509.85	
Dr. J. W. Lockwood's donation placed in Central Trust Co.,	50.00	
		$2,441.59
Balance, Sept. 27, 1887,		$240.79

BUILDING FUND.

Balance in Building Fund, Nov. 16, 1886, ...	$415.00	
Dr. J. W. Lockwood's donation, ...	50.00	
		$465.00
Sept. 27, 1887, balance in Treasury, consisting of		
Building Fund, ...	$465.00	
Cash in hands of Treasurer, ...	240.79	
		$705.79

(Signed) JOHN H. HINTON, M. D., *Treasurer.*
41 West 32d Street, New York.

Drs. Reynolds, E. H. Squibb, and B. L. Hovey were appointed the Auditing Committee.

Dr. FERGUSON moved that the report of the Nominating Committee be deferred to a later period in the session, to be called up as a special order at any time.

Motion carried.

At a later period in the session, Dr. HOVEY, chairman of the Nominating Committee, made the following report:

At a meeting of the Nominating Committee Dr. HOVEY was chosen chairman, and Dr. DIDAMA, Secretary.

Dr. JOHN CRONYN was unanimously recommended for election as President.

For Vice-Presidents:

First District, Dr. BYRON DEWITT, Oswego County,
Second District, Dr. ROBERT SELDEN, Greene County,
Third District, Dr. CHARLES W. Brown, Chemung County,
Fifth District, Dr. EDWIN BARNES, Dutchess County,

were recommended for election.

For Members of the Council:

First District, Dr. IRA H. ABELL, Jefferson County,
Second District, Dr. THOMAS WILSON, Columbia County,
Third District, Dr. H. O. JEWETT, Cortland County,
Fourth District, Dr. S. T. CLARK, Niagara County,
Fifth District, Dr. JOHN G. TRUAX, New York County,

were recommended for election.

(Signed) B. L. HOVEY, *Chairman.*
H. D. DIDAMA, *Secretary.*

Upon motion of Dr. FERGUSON the report of the Nominating Committee was accepted.

Dr. FERGUSON moved that the Secretary of the Committee on Nominations deposit a ballot for the names read by the chairman.

The motion was carried, and the ballot duly deposited.

The PRESIDENT-ELECT appointed Dr. C. A. Leale Member of the Council at-large.

The Auditing Committee reported that it found the total receipts of the year were $2,682.38, and the expenses were $2,441.59, leaving a balance of $240.79. The Treasurer's report was therefore found correct.

The report of the Auditing Committee was accepted without objection.

The remainder of the morning session was devoted to the reading and discussion of papers.

AFTERNOON SESSION.

The Association was called to order at 1:30 P. M. by the PRESIDENT, Dr. TAYLOR, and the discussion on Placenta Praevia and other papers, as arranged in the programme, completed the work of the Annual Meeting.

PRESIDENT TAYLOR then addressed the Association in a few farewell remarks, congratulating them on the success of the meeting, and introducing the President-elect, Dr. John Cronyn, of Erie County.

Dr. CRONYN, in reply, acknowledged the honor of his election, and said he feared the kindness of the Association had placed upon him a burden that would not leave him as healthy next year as he was to-day, or as he felt a short time ago before it was announced that he was the incoming President. He would say, in the words of the worthy gentleman who had just retired from the office of President, "I am in the hands of my friends." He was in the Association in its early struggles, and trusted he would stay with it a very long time. As efficiently as he could he would discharge the duties of the office for a year.

The SECRETARY then moved that the Fourth Annual Meeting of the Association be closed.

The motion was carried.

E. D. FERGUSON, *Secretary.*

REPORTS OF THE DISTRICT BRANCHES.

FIRST DISTRICT BRANCH.

The third annual meeting of the First District Branch was held at Hotel Warner, Amsterdam, on July 19, 1887. Seventeen Fellows were present and registered.

The President, Dr. John P. Sharer, presided, and, the Secretary being absent, Dr. Ezra Graves was chosen Secretary pro tem.

Dr. Robb, as chairman of the Committee of Arrangements, reported the provisions made for the meeting. The report was accepted.

There was no Treasurer's report presented.

A Nominating Committee was then appointed, after which Dr. Graves read a paper on "The Use of Alcoholic Stimulants in Disease," in which a warning was conveyed as to the probably too frequent and free administration of alcohol.

The paper was discussed by Drs. Ferguson, Marsh, Van Vranken, French, and Ayers.

Dr. Ferguson read a paper on the "Recognition and Significance of Renal Albuminuria," and exhibited specimens showing the results with various tests for albumen in the urine.

A recess was taken for dinner, and on reassembling, on the report of the Nominating Committee, the present Executive Committee was re-elected with the exception of Dr. Wm. D. Garlock, who was substituted for Dr. John P. Sharer for Herkimer County, and in the absence of a quorum of the Executive Committee, the Branch elected Dr. Ezra Graves, Secretary, vice Dr. Booth, resigned.

The President appointed Drs. French, Robb, and Klock a committee to report on the death of Dr. Alexander Ayres. They reported as follows:

WHEREAS, It has pleased the Divine Dispenser of all good to remove by death one of our esteemed co-workers and associates in the ranks of the First Branch of the New York State Medical Association,—therefore be it

Resolved, That in the death of Dr. Alexander Ayres the profession loses a careful, judicious, and successful practitioner, an honest man, and Christian gentleman.

That we should cherish his memory and emulate his virtues, imitate his example in endeavoring to follow the Great Physician in our daily walk, our professional life, and our intercourse with our professional brethren.

That we recognise in him one who was ever watchful in the discharge of his professional duty; a mind well stored with medical knowledge, devotedly attached to his profession, who finally passed away full of years and honor.

The report of the committee was adopted, and Dr. French was requested to prepare a memorial.

An assessment of one dollar was ordered, to pay the indebtedness and provide for the current expenses of the Branch.

The following papers were then read:

"The Aetiology of Consumption," by S. H. French, M. D., of Montgomery County.

"The Nature of Fever," by W. D. Garlock, M. D., of Herkimer County.

"Hospitals for the Smaller Towns," by E. T. Rulison, M. D., of Montgomery County.

"How to Prevent Laceration of the Perinaeum," by W. H. Robb, M. D., of Montgomery County.

Each paper elicited more or less discussion and exchange of views by the Fellows present.

The session proved to be one of deep interest and profit.

Adjourned to meet in Amsterdam on the second Tuesday in July, 1888.

JOHN P. SHARER, *President.*
EZRA GRAVES, *Secretary.*

SECOND DISTRICT BRANCH.

The third annual meeting of the Second District Branch was held in Schenectady, June 28, 1887.

The meeting was called to order at 10 o'clock A. M., by the Secretary.

A telegram was received from the President, Dr. Dodge, saying that it was not possible for him to be at the meeting.

On motion of Dr. Ferguson, Dr. H. C. Van Zandt was made President *pro tem.*

The minutes of the last annual meeting were corrected by inserting the name of Dr. McDonald as Secretary in the place of Dr. Burbeck. The minutes were then approved.

The Secretary reported that he had received from Dr. McDonald, late Secretary, ... $4.25

Paid for printing cards, with postage, ...	1.75
Estimated cost of printing notices of this meeting, .	2.00
Paid for postage, ...	3.41
Amounting to, ...	$7.16

Dr. Sabin moved that the report be adopted. Carried.

On motion of Dr. Seymour, the courtesy of the meeting was extended to Dr. H. Gordinier, of Troy, and he was invited to participate in the proceedings.

The scientific work of the meeting was then taken up. Dr. Harris, who was to read a paper, not being present, Dr. Ferguson was invited to read his paper, No. 5 on the programme, on "The Recognition and Significance of Renal Albuminuria."

This essay was accompanied with samples of the best tests for albumen, showing their comparative value, and it was discussed by Drs. Seymour and Marsh.

Dr. W. W. Seymour presented an uterus, removed through the vagina for epithelioma of cervix. The patient died on the ninth day after the operation, from heart failure. Dr. Seymour also exhibited a section of intestine, removed from a patient by a laparotomy. The diseased and obstructed gut was cut away, and the edges joined. The patient died from shock twenty hours after the operation.

Dr. Seymour read a paper entitled "Two Cases of Multiple Neuritis of Alcoholic Origin." One of these cases died; the other was living now, free of the disease.

The paper was discussed by Drs. Ferguson, Marsh, and Hannan.

Dr. Lyman Barton gave an account of a case of "Pelvic Abscess in a Boy, aged fourteen years," which he aspirated through the rectum, with complete success.

This paper was discussed by Drs. Ferguson, Seymour, and Sabin.

On motion of Dr. Ferguson, A. J. Long, of Washington County, was made a member of the Executive Committee in place of F. J. Hinds, deceased.

The meeting, at 1 o'clock, adjourned to an adjoining room, where an abundant lunch was spread by the resident members.

After the lunch, at 2 o'clock, the meeting was called to order.

Dr. Seymour then read a paper on "The Surgery of Women's Diseases as seen in a recent visit to Europe."

The register showed fourteen members and four visiting members present.

The Branch then adjourned to meet in Troy in 1888.

L. C. DODGE, *President.*
C. H. BURBECK, *Secretary.*

THIRD DISTRICT BRANCH.

The third annual meeting was held in Odd Fellows Hall, Elmira, N. Y., at 10 o'clock A. M., June 16, 1887.

The minutes of the preceding meeting were read and approved.

The following members were present:

Charles L. Squire, Chemung County.
Charles W. Brown, " "
Theron A. Wales, " "
T. H. Squire, " "
Frank W. Ross, " "
Nathan Jacobson, Onondaga County.
Henry D. Didama, " "
Florence O. Donohue, " "
M. L. Halbert, Cortland County.
Frederick Hyde, " "
H. C. Hendrick, " "
S. P. Allen, Broome County.
Edward A. Pierce, Broome County.
J. G. Orton, " "
J. H. Chittenden, " "
Frederick W. Putman, " "
C. W. Greene, " "
Isaac D. Meacham, " "
W. L. Ayer, Tioga County.
William Fitch, Tompkins County.
W. R. Laird, Cayuga County.
S. M. Hand, Chenango County.
G. W. Avery, " "
L. J. Brooks, " "
H. C. Lyman, " "
E. S. Lyman, " "
S. T. Smelzer, Schuyler County.
P. B. Roper, " "
W. P. Broderick, " "
E. J. Schoonmaker, Seneca County.
Frank G. Seaman, " "
Elias Lester, " "

B. A. Church, Otsego County.
M. A. Ford, " "

Members from other districts:

John H. Hinton, New York.
Joseph D. Bryant, New York.
E. D. Ferguson, Troy.

Visitors:

John E. Eldred, Elmira; J. W. Hedding, Corning; J. H. Cole, Gillette, Penn.; J. A. Wesley, Elmira; E. W. Brown, Athens, Penn.; A. J. LeFever, Erin; J. A. Lewis, Ithaca; G. A. Mottram, Weston; A. J. Baker, Wellsburg; Jonas Jacobs, Elmira; W. H. Davis, Horseheads; D. H. Reardon, Elmira; D. J. Chittenden, Addison; John Moroney, Elmira; D. W. Brown, Rochester; C. L. Styles, Owego; H. R. Ainsworth, Addison; E. Merritt Hooper, Elmira; M. L. Bennett, Watkins; C. M. Colegrove, North Chemung; J. W. Brown, Ithaca.

The President gave his annual address, the subject being "Medicine, its Past, Present, and Probable Future." The Association passed a vote of thanks to the President for his able address.

The Secretary read the report of the Executive Committee, which was approved and placed on file.

Dr. S. P. Allen, of Whitney's Point, read a paper entitled "The Use of Cold Water as an Antipyretic, with Cases."

Dr. L. J. Brooks, of Norwich, N. Y., read a paper entitled "Clinical Value of Antipyretics."

Both papers were then discussed, as follows:

Dr. Didama said,—The last paper gives the reasons for employing antipyretic drugs in the different stages of fever, and that is a matter of great importance. I have obtained, however, better results from those drugs that do not weaken the heart. The thing we have to fight against is not the high temperature. It is not heat that kills; heat is an index to something else. We have in some reported cases a continued heat of 115 degrees, which has continued for weeks. It is not this, then, that makes the danger. We know that cold is always valuable, inasmuch as it causes an improvement in all the symptoms, but whether its good effect is the result of a neurological change is a question under consideration.

Dr. Ferguson asked whether the high temperature mentioned was common in typhoid fever.

Dr. Didama replied,—No, but that there had been one or two cases reported since the one reported in London in which the temperature ran up to 120 degrees. One case was reported of 116 degrees—the result of an injury to the nervous system. There is also a case reported of temperature of 125 degrees—that of a woman with an injured spine, produced by being thrown from a carriage.

Dr. Ferguson expressed doubt as to the reliability of the observations reported of extremely high temperature, with recovery, assuming that the apparent hyperpyrexia was due to a trick on the part of the patient.

Dr. Hendrick thought that the application of cold to the surface of the body in fevers was liable to produce throat and bronchial difficulties.

Dr. Ross thought cold the best agent for the reduction of fever. He could see, however, how mistakes had been made in the use of antipyretic drugs at improper stages.

In closing the discussion, Dr. Brooks related the experience of Dr. J. W. Mitchell, of Providence, who found that even after the reduction of the heat of the surface by cold applications the rectal temperature remained high. Antipyretic drugs, instead of favoring an external reduction of heat at the expense of an internal increase, influence the heat-producing centres and destroy the production of heat instead of causing a simple mechanical elimination. Antipyretic drugs, acting as they do powerfully upon the nerve centres, should not be used in the last stages of fever, a time when nature requires all her forces to carry the patient safely through. The application of cold is believed to increase the tendency to haemorrhage, particularly if used in the later stages of a fever.

Dr. Allen, in closing, stated that he had also observed that the external temperature might be reduced while the internal temperature continued high, but a continued use of cold would cause the internal temperature to fall. He would use cold applications to the abdomen to control intestinal haemorrhage.

These papers were also discussed by Dr. Chittenden and others.

Dr. S. M. Hand read a paper on "Leucocythaemia," reporting a case of the disease.

Dr. Didama doubted the diagnosis, inasmuch as there was no examination of the blood. He said there was undoubtedly amyloid degeneration of liver, spleen, and lymphatic glands. The changed condition of the blood corpuscles would come from an over production of the white, a wasting of the red, or a failure to transform the white into red corpuscles. We know that red corpuscles come from the white. In the case reported the increase of white corpuscles came from the irritation of the glandular system.

Dr. Church, of Oneonta, said that it was now generally believed that it was necessary to have syphilis in order to produce leucocythaemia. It was important in these cases to examine the osseous system, particularly the marrow of bones.

The meeting adjourned for lunch.

The meeting was called to order at 1:10 P. M., and the Secretary read the names of the Nominating Committee.

Dr. Charles W. Brown read a paper on the "Treatment of Fracture of the Inferior Maxillary Bone."

Dr. Brooks described the interdental splint as devised by Dr. Gibson, a dentist of New York city, and referred to Dr. Bryant for a closer description.

Dr. J. D. Bryant described the interdental splint as follows: "The splint is made an exact copy of the jaw before it is fractured. Place the jaw in its natural position as it was before the fracture, removing fragments of the alveolar process, if any exist. Take an impression of the fractured jaw as you find it. Make a model of each jaw. Now break the models, and set them in their proper line, causing the grinding surfaces of the teeth of the lower to correspond with those of the upper jaw. Now make a splint that fits accurately over these teeth. Then place the fragments of the jaw up into their proper places in the splint, either wiring the splint to the teeth and the teeth together, or holding it by bandages applied over two projecting horns. When the physician is unable to avail himself of the aid of a skilled dentist, the apparatus suggested by Dr. Brown would be of great value."

Dr. Brown, in closing the discussion, expressed pleasure in obtaining a good description of the interdental splint. He thought that this apparatus could not always be applied, particularly in cases of compound fracture with laceration of tissues. In the apparatus described by him the discharges were not obstructed, and the mouth was kept thoroughly cleansed—a most important factor.

Dr. Elias Lester read a paper entitled "Hernia of the Brain and Fungus Cerebri."

The paper of Dr. M. L. Halbert, entitled "Pelvic Cellulitis," was read by title.

The Nominating Committee reported as follows:

Executive Committee:

Broome	County,	J. P. Allen.
Cayuga	"	W. R. Laird.
Chemung	"	Charles L. Squire.
Otsego	"	M. L. Ford.
Chenango	"	Henry Lyman.
Cortland	"	Caleb Green.
Delaware	"	George C. Smith.
Madison	"	G. Y. Burhyte.
Onondaga	"	Nathan Jacobson.
Schuyler	"	P. B. Roper.
Seneca	"	Elias Lester.
Tioga	"	W. L. Ayer.
Tompkins	"	William Fitch.

The Executive Committee then had a meeting, and elected Dr. Leroy J. Brooks as Secretary, and recommended as the next place of meeting, Norwich, N. Y.

The committee presented the following resolution:

The committee, in electing a new Secretary, express their deep sense of the high value of the services of Charles W. Brown, to whose personal work has been due the gratifying success of the three meetings of this Branch, and suggest that a vote of thanks be extended to Dr. Brown.

The report was accepted.

Dr. J. D. Bryant read a paper entitled "Results of a Personal Experience in the Surgical Wards of Bellevue Hospital."

Discussed by Dr. Fred'k Hyde and Dr. T. H. Squire, the latter suggesting that as preventing deformity was better than cure, it was better in cases of club-feet to commence moulding the feet properly, or placing them, if necessary, in an apparatus to hold them in proper position, as soon as the child was born. He exhibited an apparatus, devised by himself, for the purpose of straightening club-feet.

Dr. Bryant spoke of the safety of osteotomy, there occurring only three deaths out of 600 cases, and only one death of the three could be attributed to the operation. He believed, if cases were taken early enough, the deformities could be corrected without osteotomy. He complimented Dr. Squire's apparatus.

Dr. Jacobson favored the use of the chisel instead of the saw for the operation, as less liable to leave fragments.

Dr. F. O'Donohue read a paper entitled "The Induction of Premature Labor for Puerperal Albuminuria and General Dropsy."

Discussed by Dr. Jacobson.

Dr. Avery thanked the committee for naming Norwich as the place of the next meeting.

Dr. Nathan Jacobson read a paper entitled "An Unusual Case of Urinary Fistula."

Discussed by Dr. J. D. Bryant, who reported a case of cystic fistula, produced by a man falling upon a piece of boiler iron, which made an incision through the perinæum into the bladder. In this case there was spontaneous cure by keeping a catheter in the bladder. The man recovered in five weeks.

Dr. T. H. Squire advised early section in urethral injuries.

Dr. F. W. Ross read a paper entitled "Bergeon's Treatment of Consumption by Gaseous Enemata."

Discussed by Dr. Charles W. Brown, who reported the discussion on the subject held at the recent Chicago meeting of the American Medical Association. In nearly all the reported cases where the measure was used there was a relapse, and eventually a rapid progress toward a fatal termination. It was stated that the benefit of the treatment came from the arrest of decomposition, and not from the destruction of the bacillus.

Dr. T. H. Squire read a paper on "Uterine Fibroids."

Dr. Frederick Hyde was obliged to leave early, and his paper, entitled "The Symptoms, Diagnosis, Prognosis, and Treatment of Medullary Cancer," was read by title.

A paper by Dr. Orsen M. Allaben, on "Erythema Nodosum," was read by title.

Dr. H. D. Didama read a paper entitled "The Medical Athenians."

A vote of thanks was extended to the President, Secretary, and Committee of Arrangements, also to Dr. Bryant.

Adjourned.

G. W. AVERY, *President.*
LEROY J. BROOKS, *Secretary.*

FOURTH DISTRICT BRANCH.

The third annual meeting of the Branch was held at Powers hotel, Rochester, May 10, 1887.

The meeting was called to order at 10:30 A. M. by President Darwin Colvin, of Wayne County.

The minutes of the second annual meeting, and of a meeting of the Executive Committee, were read by the Secretary.

The report of the Treasurer was read, and was accepted and adopted without objection.

The President announced that the Fellows present from each county should appoint one Fellow from each county as a member of the Nominating Committee.

The first paper on the programme was read by Dr. B. L. Hovey, of Monroe County, on "Cold as a Therapeutic Agent."

The paper and subject were thoroughly discussed by Drs. E. D. Ferguson, E. M. Moore, and Colvin.

The meeting then adjourned to 2 o'clock P. M.

AFTERNOON PROCEEDINGS.

Dr. A. A. Hubbell, of Erie County, presented a paper upon "Diphtheritic Conjunctivitis."

The Nominating Committee then reported, recommending the following members of the Executive Committee:

Alleghany County, Dr. B. C. Wakely; Cattaraugus County, Dr. V. A. Ellsworth; Chautauqua County, Dr. Wm. Chace; Erie County, Dr. F. F. Hoyer; Genesee County, Dr. A. P. Jackson; Livingstone County, Dr. G. H. Jones; Monroe County, Dr. R. M. Moore; Niagara County, Dr. S. T. Clark; Ontario County, Dr. J. H. Allen; Orleans County, Dr. H. C. Tompkins; Steuben County, Dr. N. M. Perry; Wayne County, Dr. L. S. Sprague; Wyoming County, Dr. G. M. Palmer; Yates County, Dr. D. M. Smith.

Upon motion of Dr. Hovey the report of the Nominating Committee was accepted and adopted.

The Executive Committee then held a meeting, and reported that they had elected Dr. Wm. H. Thornton Secretary and Treasurer for the ensuing year, and designated Buffalo as the place for the next annual meeting.

Upon motion of Dr. Ferguson the report of the Executive Committee was accepted and adopted.

Dr. R. M. Moore, of Monroe County, presented "A Report of Three Cases of Contagious Disease," which was discussed by Drs. Hubbell, E. M. Moore, J. C. Greene, Ferguson, and Stockton.

The remainder of the session was devoted to the presentation and discussion of a number of very interesting pathological specimens by Dr. E. M. Moore, of Monroe County.

Adjourned.

DARWIN COLVIN, *President.*
WH. H. THORNTON, *Secretary.*

FIFTH DISTRICT BRANCH.

The third annual meeting of the Fifth District Branch was held in Brooklyn, at Remsen hall, on Tuesday, May 24, 1887.

Called to order by the President, Dr. Isaac E. Taylor, at 11:35 A. M.

The minutes of the last meeting were read by the Secretary, and accepted.

The report of the Committee of Arrangements was read and approved.

The President then read his annual address, which was ordered to be published.

The President next called for reports of delegates, but the Secretary stated that there were none this year.

The annual report of the Executive Committee, as follows, was read and adopted:

The Executive Committee begs leave to report that there have been but two meetings during the year, one of which was simply to elect a Secretary for this past year.

In regard to the funds of the Branch, as shown by the Treasurer's report, there are now $71.35 deposited in the Seaman's Savings Bank of New York, and $3.25 in cash, and all bills are paid up to date.

Since our last meeting the Secretary has received the resignation of Dr. T. H. Manley, of New York city.

E. H. SQUIBB, *Secretary.*

The Treasurer then read his annual report, as follows, which was accepted and approved.

The Treasurer has the honor to report, that in compliance with the amended by-laws of last year, there was sent with the preliminary notice of this meeting to each Fellow then on the Association list the following note, with a bill for the amount:

"Heretofore an assessment has been made only on the Fellows present at each meeting to defray necessary expenses, but hereafter, as provided by the amended Constitution of the Branches (Sec. 15), the assessment is to be made equally on all the Fellows of the Branch. The Executive Committee, therefore, have decided upon a uniform assessment of $1 for all Fellows.

"By judicious management the committee expect the amount thus collected to meet expenses for the next two years.

"Hereafter there will be no collections made at each meeting except from delinquents."

By this means the Treasurer is now able to report that he has cancelled all the Branch indebtedness to date, and the treasury contains $71.35,

deposited in the Seaman's Savings Bank, and $3.25 in cash on hand, making a total of $74.60; the receipts for the year (October 12 to May 23), $128; the expenses, $21.35.

E. H. SQUIBB, *Treasurer.*

The Secretary announced that he had received the programme of the annual meeting of the Third District Branch, to be held on June 16, 1887. There were to be fourteen papers read, and promise of a very successful meeting.

The Secretary also announced, as a matter of interest to the Fellows of this Branch, as well as to those of the rest of the state, the formation of a new county association—the Kings County Medical Association—on February 23, 1887, with the following officers:

President, E. R. Squibb; Vice-President, Avery Segur; Recording Secretary, R. M. Wyckoff; Corresponding Secretary, W. G. Russell; Treasurer, J. R. Vanderveer; Elected Members of the Executive Committee, J. D. Rushmore, Wm. McCollom, A. R. Paine, George Wieber.

The Secretary regretted to have to announce officially the death of the following Fellows:

One Founder, Henry Slack, of Fishkill-on-Hudson; one Original Fellow, Eugene Lauer, of New York city; and one recently elected Fellow, C. R. M'Clellan, of Brooklyn.

The Secretary read a local newspaper account of the life of the late Dr. H. Slack, sent to the Branch by a Fellow. On motion, it was referred to the Committee on Necrology.

The Secretary stated that Dr. J. C. Hutchinson had intended to be present and to read a biographical sketch of the life of Dr. C. R. M'Clellan, but owing to his sudden indisposition, he would have to be excused. It was moved that the Secretary be authorised to receive Dr. Hutchinson's remarks when presented, and to at once refer them to the Committee on Necrology for publication. Carried.

The Secretary next read a short biographical note of the late Dr. Eugene Lauer, by W. T. White, M.D. On motion it was referred to the Committee on Necrology.

The Scientific Papers were next in order.

Dr. J. D. Sullivan read his paper on "Therapeutic Effects of Ammonium Salicylate, with Cases."

The paper was discussed by Drs. Wieber, Carroll, Lloyd, and E. H. Squibb, and ordered to be published as provided for by the Executive Committee.

Dr. M. T. Pultz's paper was next called for, but as he was not present, a motion was carried that should he arrive during the afternoon session, the Branch would be glad to hear his paper at that time.

The President then announced that the Nominating Committee to appoint an Executive Committee for the ensuing year would now be chosen

by the Fellows present. The Secretary read off the counties in order, and the Fellows present made the following appointments for the counties from which representatives were in attendance:

Kings Co., J. D. Sullivan; New York Co., J. H. Hinton: Richmond Co., A. L. Carroll; Rockland Co., Wm. Govan; Suffolk Co., W. D. Woodend; Ulster Co., H. Van Hoevenberg.

After explaining that this committee should meet during the intermission, the meeting adjourned at 12: 45 P. M.

The afternoon session was called to order by the President at 2: 30 P. M.

Dr. F. S. Dennis read his paper on "Trephining in Gun Shot Injuries of the Skull." The paper was a very interesting one, and represented a great deal of work and care. It was illustrated with a number of skulls, marked to show the localities to be avoided when operating; also 114 specimens of actual operations performed were presented.

The paper was discussed by Drs. Garrish, Carroll, and the author, and unanimously ordered to be published.

The next paper was read by Dr. R. C. Van Wyck, on "Abortive Treatment in Acute Diseases."

There was no discussion, and the paper was ordered to be published.

The Nominating Committee reported as follows:

FOR MEMBERS OF EXECUTIVE COMMITTEE.

Dutchess—John Young,	Richmond—F. U. Johnston,
Kings—Wm. McCollom,	Rockland—Wm. Govan,
New York—P. B. Porter,	Suffolk—W. D. Woodend,
Orange—W. B. Eager,	Sullivan—T. W. Bennett,
Putnam—Wm. Young,	Ulster—F. Huhne,
Queens—Edwin Webb,	Westchester—N. C. Husted.

On motion, the report was accepted and approved, and the committee was discharged.

After the President had called a meeting of the new Executive Committee, immediately after adjournment, to appoint a Secretary for the ensuing year, the Branch, on motion, adjourned at 4: 05 P. M.

The Register showed thirty-four Fellows and one visitor present.

E. H. SQUIBB, *Secretary.*

The annual meeting of the Executive Committee was held in Remsen hall, on Tuesday, May 24, 1887.

Called to order by the President, Dr. Isaac E. Taylor, at 10: 10 A. M.

Present: Drs. Isaac E. Taylor, Wm. Govan, F. U. Johnston, Wm. McCollom, H. Van Hoevenberg, W. D. Woodend, E. H. Squibb.

The Secretary read the minutes of the last meeting, which were approved.

The report of the Committee of Arrangements, as follows, was read and accepted:

REPORT OF THE COMMITTEE OF ARRANGEMENTS FOR THE ANNUAL MEETING, 1887.

The undersigned, as your Committee of Arrangements, respectfully submit the following report:

Not being able to secure the hall found so satisfactory last year, it was finally decided to make arrangements with Mr. S. Baron for the use of Remsen hall. The agreement was to occupy the rooms (Remsen hall and adjoining small rooms), with all their accommodations, from about 10 A. M. to 5 P. M., for the sum of ten dollars ($10.00).

We also decided upon the hour of 11 A. M. for opening the meeting.

Respectfully submitted,

J. C. HUTCHISON, *Chairman.*
JNO. D. RUSHMORE, M. D.
T. M. LLOYD, M. D.
AVERY SEGUR, M. D.
R. M. WYCKOFF, M. D.
ISAAC E. TAYLOR, M. D., } *Ex officio.*
E. H. SQUIBB, M. D., }

The President appointed Dr. H. Van Hoevenberg and Dr. N. W. Leighton as a committee of two to act with the Secretary as a Committee on Registration.

The Treasurer then presented his cash and bank books and vouchers for examination.

The President appointed Dr. Johnston to audit the accounts.

The Treasurer made the following statement:

Receipts have been, ...	$128.00	
Due Treasurer at last meeting, ...	32.05	
Available funds, ...		$95.95
Expenses since last meeting, ...		21.35
Amount on hand May 28, ...		$74.60

The Secretary read the resignation of Dr. T. H. Manley.

The subject of the publication of the papers presented to the Branch was now brought up. The Secretary read a note from the editor of "Gaillard's Medical Journal," stating that the papers to be read to-day would be published as promptly as possible, and each author was to have a number of copies of the journal containing his article. The Secretary also read a note from the editor of the "Philadelphia Medical Times," expressing the desire to make arrangements to publish the papers of the Branch, the publishers furnishing "one hundred reprints (with cover) of each article published." A copy of the journal was presented for in-

spection. After some discussion, it was decided to continue to publish the papers, as previously arranged, for the present, and the Secretary was directed to farther correspond on the subject, being appointed as a committee of one, with power to decide upon a suitable journal.

The question of the locality for the next Special Meeting was next discussed. The Secretary stated that for some time back some of the Fellows have been expressing the desire to see the Branch meet at some place on Long Island. He, therefore, had been corresponding with Dr. Woodend, of Huntington, in regard to meeting somewhere in his neighborhood. Dr. Woodend, being present, was asked to give his views. After some general discussion, it was moved and carried that Dr. Woodend and the Secretary be appointed a committee of two to decide upon the locality and the date of the next Special Meeting. Dr. Woodend was chosen chairman of the Committee of Arrangements, and the committee of two was given power to fill up the Committee of Arrangements to the required number.

Dr. Johnston reported that he had found the Treasurer's books correct.

The Secretary then asked if there were to be any delegates appointed to either the International Medical Congress or the American Medical Association. Drs. Woodend, Govan, and Squibb expressed a desire to go as delegates to the International Medical Congress. It was moved and carried that it be announced to the general meeting of the Branch that all those Fellows who desire to go as delegates to either or both of the above meetings should notify either the President or the Secretary, who are given the authority to make the appointments.

There being no farther business, the committee adjourned at 10: 50 A. M.

E. H. SQUIBB, *Secretary.*

A meeting of the newly elected Executive Committee was held in Remsen hall, Brooklyn, May 24, 1887, immediately after the annual meeting of the Branch.

Called to order by the President, Dr. Isaac E. Taylor.

Present: Drs. Isaac E. Taylor, Wm. Govan, F. Huhne, F. U. Johnston, Wm. McCollom, W. D. Woodend, E. H. Squibb.

The meeting was called for the purpose of electing a Secretary for the ensuing year.

Upon the nomination of Dr. Johnston, E. H. Squibb was reëlected.

Adjourned.

ISAAC E. TAYLOR, *President.*
E. H. SQUIBB, *Secretary.*

NEW YORK COUNTY MEDICAL ASSOCIATION.

Annual Report.

The President of the New York County Medical Association, in behalf of the Fellows of the same and in accordance with the requirements of the parent organisation, has the honor to submit the subjoined report:

The meetings have been held agreeably to the by-laws; they have been well attended, in that particular being proportionately larger than those of most other associations. The papers of scientific value have been listened to with interest, and have been well discussed. The debates have been courteously conducted, with a view to mutual improvement, and the proceedings have been satisfactorily reported in such publications as "Gaillard's Medical Journal" and the "New York Medical Journal," with a very excellent synopsis of the more prominent papers in the correspondence of the "Journal of the American Medical Association."

The treasury is in a healthy condition, showing at the present writing a credit of $188.21. The collation at the close of each meeting has been continued, and, as heretofore, has proven of value in the bringing together into a closer friendship many members of the profession.

As the date of the Annual Meeting of the State Association is distant some months from that of the County Association, I have also the honor to offer the following *résumé* of the work done since the retirement of Dr. Charles A. Leale, whose brilliant administration has contributed so much towards the success of the Association:

Dec. 20, 1886. Dr. Frank Grauer read a paper entitled "The Pathology of Scarlatinal Nephritis," in which he discussed the minute changes, using the classification of Friedländer, viz.,—1. The initial catarrhal nephritis, accompanying the exanthem, of short duration, and rarely leading to a fatal issue. 2. The large, flabby haemorrhagic kidney, not so frequent as the other two forms, but liable to occur from the first to the fourth week of the disease, and to run a rapid course. This condition is coexistent with extreme angina and diphtheritic inflammation. Here the urine may be normal from within twenty-four to forty-eight hours of death. Oedema is rarely present. 3. Acute glomerulo-nephritis, or nephritis post-scarlatinosa, found in the third and fourth weeks of the disease, and marked by the appearance of oedema about the eyes and lower extremities. Here the urine is albuminous, diminished in volume,

of high specific gravity, and contains red and white blood corpuscles, renal epithelium, also hyaline, epithelial, and granular casts. As the process advances the urine becomes bloody, varying in hue from a slight smokiness to a dark red; and sometimes there may be a complete suppression, ending, of course, in death. Beside these changes, there is an accumulation of fluid in the abdominal, pleural, and pericardial cavities.

Nine cases of glomerulo-nephritis, which Dr. Grauer had examined in the pathological laboratory of Dr. Carl Friedländer, had shown the following changes: The kidneys were enlarged and hyperaemic, the cortical substance was slightly thickened, but there was no loss of cortical striae. The glomeruli were pale, prominent, and more or less enlarged. Microscopically, the uriniferous tubules were apparently normal; occasionally in some tubules a slight parenchymatous change was present. The glomeruli were enlarged and bloodless. The capillary loops were dilated and filled with a mass of nuclei, which proved to be the nuclei of proliferated endothelial cells, and not white blood-corpuscles. There were also swelling and proliferation of the glomerular epithelium. Proliferation of the capsular epithelium, as described by Klebs, was not observed, although it occurred in certain forms of scarlatinal nephritis. From these examinations the author thought the conclusion could be drawn that the change was a proliferation and thickening of the endothelial cells, which produced obstruction to the circulation of the blood through the capillaries, and not a compression of the capillaries by proliferation of the glomerular epithelium, as had been supposed. In injected specimens the vasa afferentia were dilated to twice or three times their normal size. The loops of the capillaries were not injected, showing that there was an obstruction in them.

Dr. Austin Flint said that formerly the belief had prevailed that the solid constituents of the urine were secreted by the cells of the convoluted tubules, while the glomeruli, or Malpighian bodies, had to do with the transudation of the liquid element. Afterward this view gave place to another, namely, that the Malpighian bodies participated largely with the cells of the convoluted tubules in the liberation of the excrementitious constituents of the blood. But another change of opinion among physicians, and shared by him, had taken place in favor of the older opinion. The pathological condition, known as glomerulo-nephritis, had been only recently recognised, its discovery being due to improved modes in microscopical study. The subject of uraemia, referred to in the paper, was one which had greatly interested him, and he was now emphatically of the opinion that his former views, so very decided as they were, would bear revision. Within the past year he had examined the excrementitious matters of the urine to a considerable extent, and sometimes a doubt had risen in his mind as to whether urea was a poison. He thought from some of these recent investigations that probably water, as

it was produced in the body, was an excrementitious substance—an innoxious one; for certainly water in excess in the body did not act as a poison. Recalling some old experiments, it would be seen also that carbonic-acid gas was not in itself a poison, for animals inhaling this gas, and at the same time an increased amount of oxygen, did not die. It was undoubtedly true, however, that the kidneys were necessary to life, as animals died when both were removed. As to the cause of death, it was attributed to uraemia. He believed that the parenchymatous degenerations observed in so many acute diseases were due very largely to the elevation of the temperature—a point which had not been mentioned in the cases reported; that the direction which the parenchymatous degenerations took was determined, at least in many cases, by the character of the poison which gave rise to the fever. In scarlatinal nephritis there was diminution of the urine, with an increase of its specific gravity, and the quantity of albumen was frequently large. Why was it, he asked, that the cells of the convoluted tubules separated the solid constituents, while the Malpighian bodies failed to pour out water to wash away the solid elements?

Dr. ISAAC E. TAYLOR referred to cases of death within forty-eight hours after the commencement of scarlatina, and queried as to its cause, whether or not it was a profound impression of the poison upon the nervous system. He knew, of course, that his own experience was not unique, as other physicians could testify to the same phenomenon, the patient seeming to have been overwhelmed by a most terrible poison. All were, of course, cognisant of the fact, but not of the real cause. The subject was an interesting one, and he would be pleased to have more light thrown upon it, although in the way of therapy not much could be expected.

After some farther remarks by other gentlemen, Dr. GRAUER closed the discussion, and said, with regard to whether, in complete obliteration of the glomeruli, the epithelium of the convoluted tubules could perform the work of the kidneys, that he had examined the kidneys in one case in which there had been complete anuria for twenty-four hours, and found the tufts completely obliterated. Here the epithelium lining the tubules had not been able to do the work. As to Dr. Taylor's question, he said that all the cases with complete suppression of the urine and early death, examined microscopically, showed acute glomerulo-nephritis. Whether in any case a nervous trouble would cause suppression of the urine, he was unable to say. The majority of cases of scarlatinal nephritis ended in recovery, but a few passed on to chronic kidney trouble.

Dr. JOSEPH D. BRYANT presented a vermiform appendix, which he said he had removed from a patient last summer. The case occurred in a neighboring town, and was seen in consultation with Drs. Janeway and W. T. Bull. The cause of the illness, which occurred in a gentleman

forty-five years of age, of previous good health, was entirely unknown. About fifty hours before Dr. Bryant saw him, he was suddenly attacked without appreciable cause, with a moderately severe pain in the epigastric region. He attached but little importance to it, merely attributing it to a slight diarrhoea of some ten or twelve hours' duration, for the relief of which he took a mild cathartic. This afforded him marked benefit. He noticed no pain or tenderness in the right iliac region. About fifteen hours afterward the pain, still located in the epigastrium, became more severe than at the outset, for which the family physician prescribed another cathartic, followed by an anodyne. The bowels, however, were not moved, and the pain had increased, while the abdomen now became tympanitic; and nausea, with occasional vomiting, set in. The last symptom, however, did not point to any special morbid process. Enemata were now administered, but seemed to dislodge only a few small scybalous masses. The condition of the patient became gradually worse, and Dr. E. G. Janeway arrived, in obedience to a summons, about forty hours after the original attack. Five hours later Dr. Janeway was joined by Drs. Bryant and Bull, and the following facts were noted: The patient's perceptions were intact, although somewhat blunted by the previous use of opium; persistent, although not severe, nausea existed, with occasional vomiting; the matter vomited had no distinctive characteristics; the abdominal walls were extremely distended, with tympanitic resonance well marked in all regions; hepatic dulness normal; tenderness on pressure very general, but best marked at the lower portions of the abdomen; no isolated point of special tenderness discoverable, and all pain still referable to the epigastric region; the abdominal walls were too tense to render deep palpation of any service, and digital rectal examinations disclosed nothing abnormal; temperature 102°, pulse 108; respiration of increasing frequency, but painless; bowels obstinately constipated, with an absence of all intestinal sounds and of appreciable vermicular movements; and the thighs were flexed; also the urine required to be drawn off with a catheter. As the result of this examination, the consultants believed, (1) that a more or less general peritonitis existed; (2) that it was secondary to either obstruction of the intestinal tract or perforation of it; (3) that immediate measures of relief must be taken to insure a chance for recovery; (4) that medicinal measures afforded no such chance; (5) that an exploratory abdominal incision was warranted. The patient willingly gave his consent to the proposed means of relief, and the operation was performed in as thoroughly an antiseptic manner as the contingencies of the case would admit. As soon as the peritonæum was incised, a very small amount of thin, non-offensive, reddish colored fluid escaped. The small intestines were extremely distended, and their serous surfaces deeply congested. The sigmoid flexure (which extended across to the right iliac process) presented similar appearances. In

some situations evidences of recent lymph were seen. No characteristic local indications of an obstruction could be found anywhere. The intestines at and about the right iliac fossa presented the evidences of a more profoundly inflamed condition, and for this reason the caput coli was closely examined. It, too, presented appearances similar to the contiguous intestines. The vermiform appendix was then sought for and found, but with considerable difficulty. It arose from the inner and peritonaeal surface of the caecum; it was about two and one half inches in length, and covered entirely by peritonaeum; it was also unattached, except at its origin from the caecum; it was likewise standing nearly erect, swollen, and darkly congested between the intestinal folds, presenting somewhat the outline of a distended leech. At its base three perforations were found, two of which were each about the size of a small pea, the other being somewhat smaller. In one of these openings was a small mass of faecal matter. At and around the base of the appendix, a considerable amount of the reddish, non-offensive fluid mentioned was found, and it was mixed with flakes of recent lymph. The appendix was tied at its base below the point of perforation with a strong silk ligature, and removed by the scissors. The abdominal toilet was performed with antiseptic sponges and a warm solution of bichloride of mercury (1 : 10,000). A drainage tube was introduced, and the abdominal wound closed and dressed antiseptically. The patient rallied from the immediate effect of the operation, but died twelve hours afterwards from exhaustion.

Dr. Bryant directed attention to the following points: (1) The preceding diarrhoea; (2) the absence of pain at the seat of the lesion; (3) the localisation of the pain in the epigastric region; (4) the comparative quiet following the first attack; (5) the existence of normal hepatic dulness; (6) the extension of the sigmoid flexure to the right iliac fossa; (7) the unusual arrangement of the vermiform appendix; (8) the absence of the evidence of any restricting inflammatory process; (9) the uncertainty attending the diagnosis of the exciting cause; and (10) the unusual means adopted for the patient's relief.

In executive session, on motion of Dr. E. SANDERS, the hours of holding the meetings of the Association were changed from 8 to 8:30 P. M.

January 17, 1887. Annual meeting, Dr. C. A. Leale in the chair. The following were elected:

President—JOHN SHRADY.
Vice-President—JAMES R. MACGREGOR.
Recording Secretary—P. BRYNBERG PORTER.
Corresponding and Statistical Secretary—GLOVER C. ARNOLD.
Treasurer—C. ELLERY DENISON.
Member of Executive Committee—EDWARD SANDERS.

Dr. H. M. Biggs gave a "History of an Epidemic of Dysentery," showing an origin in faulty drainage. He summarised the mortality of an epidemic in the alms-house on Blackwell's Island during the years 1884, 1885, and 1886. The number of deaths in the female department for June, 1884, was none; 1885, 1; 1886, 13. For July, 1884, 4; 1885, 8; 1886, 17. For August, 1884, 9; 1885, 5; 1886, 4. For September, 1884, 10; 1885, 4; 1886, none. The mortality was attributed to age, close quarters, coarse food, and especially hot weather. The sanitary condition was pronounced good by the proper authorities, but in 1886 there was an unusual number of cases of dysentery, the number of deaths in July reaching 17. The author of the paper then went on the service with a weekly death-rate of five or six, while the number of new cases averaged from twelve to fifteen without including the milder forms, which were numerous. Believing that dysentery was an infectious disease, due to some definite cause, he made a close investigation, finding the wards much crowded, and the ventilation far from good. Aside from these facts, little fault could be found, for the wards were extremely clean; the food, though coarse, was good and well cooked; the water was the Croton; and the drainage seemed to be good. He found that the severe cases were mainly in the blind ward, which had a closet apart from the rest, and was constantly used by about eight hundred persons. This closet was in an exceedingly bad condition, not flushed, had a great accumulation of faeces, and gave forth an intolerable stench. It had not been cleaned since the preceding autumn, and it could not be completely emptied under the best of conditions. At Dr. Biggs's request, the closet was immediately washed out and disinfected, and the beds and vessels of the infected patients were cleansed. With the exception of one case, all the deaths from dysentery after this fell to the lot of those who had previously contracted the disease. In other words, only one death occurred in patients who contracted the disease after the writer began his service; and this death was not from dysentery, but from an accidental complication—cerebral haemorrhage. From August 10 to September 5 there were no no new cases. A number of autopsies were made, and the lesions found were always those of severe follicular and diphtheritic dysentery.

The treatment most successful before the disease had become chronic consisted in a combination of castor-oil and opium, and a strict milk diet. In the later stages, bismuth was used in large doses, or nitrate of silver and opium, and in some cases enemata of starch and opium, with cocaine added.

The history of this epidemic proved that dysentery was due to an active specific micro-organism present in decomposing excrements. The author had not been able to demonstrate the micro-organism in this epidemic. He thought it might possibly be one of the organisms of putrefaction. The difficulty of isolating it from the stools was very great,

owing to the almost innumerable germs constantly present even in the normal condition.

Dr. C. A. LEALE, referring to the persistency of the germs giving rise to dysentery, said he knew of houses in the city, which, although apparently in the best condition, were shunned by renters because of the great death-rate which had occurred in them. He knew of palaces that were perfect death-traps.

Dr. P. B. PORTER referred to an epidemic of dysentery in a village on Long Island where he, in connection with the sanitary authorities, had found sufficient cause in drainage from the closets into the wells.

Dr. FRANCIS M. NYE, during his earlier practice, knew of certain epidemics of dysentery in some towns of South Carolina, which might be explained as being due to the cause as given by Dr. Biggs, for the drainage was notoriously bad, or, to say the least, primitive and accidental.

Dr. J. W. S. GOULEY read a short paper on "The Indiscriminate Cutting of the Meatus Urinarius," which was a plea against this growing practice. He had seen the penis put in the condition of an old rubber hose, with the nozzle larger than the rest of the channel. Such treatment rendered the urethra inelastic, utterly incapable of properly expelling the urine. He also disapproved of the passage of large sounds, thereby overdistending the canal.

His remarks were supported by Drs. ALFRED L. CARROLL and JOHN SHRADY.

Dr. GRAUER presented specimens of "Extra-uterine Gestation" from a patient who had died somewhat suddenly. At the autopsy, a clot of blood was found in the peritonaeal cavity, covering a foetus apparently of the seventh or eighth week. The site of rupture was near the body of the uterus, on the posterior wall of the Fallopian tube. He called attention to three points,—the presence of the decidua vera in the uterus; the sympathetic enlargement of the body of the uterus; and the thinness of the posterior portion of the Fallopian tube at the site of rupture. The woman had borne two children.

Dr. E. G. JANEWAY presented, also, through Dr. H. M. BIGGS, a specimen illustrating secondary multiple carcinoma of the liver with the primary growth at the junction of the cystic with the common duct—a very unusual condition.

Both specimens elicited remarks from several Fellows.

Dr. J. W. S. GOULEY related the history of a case in which a multiplicity of lesions was found at the autopsy. The patient was a woman, seventy-two years of age, who had for thirteen years been under his observation, being during that time bedridden. She had a hernia, and at the autopsy the inguinal ring was found to have attained to a diameter of nine inches. *All the intestines were in the sac except the duodenum, caecum, and rectum.* She had had what the French called intermittent diabetes

mellitus. The cause of death was exhaustion and bronchitis. There was marked sclerosis of both kidneys, also of the spleen, together with an old mitral stenosis.

Dr. A. FLINT, who had seen the patient two or three times, said the case was interesting from two points of view: First, it was the only case of saccharine diabetes of long standing observed by him in which the intermittent element seemed to be independent of diet and treatment. He had seen several, in which sugar would disappear under treatment, to return again after faulty feeding, say after what might be termed a sugar debauch. Second, in the case in question there had been no coma—a condition which he firmly believed might be warded off indefinitely by an anti-diabetic diet

He referred to another case, that of a lady aged seventy, who for seven or eight years had persistent diabetes. For some time Dr. Lusk had the care of the patient, but gangrene having attacked one of her feet, she was transferred to Dr. Dennis. The daily ingestion of very large quantities of milk was stopped by Dr. Dennis and himself, as he was then an associate in counsel; and they placed her upon a very strict anti-diabetic diet with a three-drop dosage of Clemens's solution of arsenite of bromine. The quantity of urine decreased from one hundred and ten to fifty ounces; and the condition of the foot also improved for a time, although the gangrene afterwards extended. Death finally ensued from exhaustion. In this case, as in the other, the mind was clear to the very last. He thought that there was some obscure poison in the blood which the kidneys were unable to eliminate; but be this as it might, it was certainly noticeable that when the coma came, the sugar disappeared. He averred that, as a rule, physicians did not *personally* become cognisant of the diet of their diabetic patients, and that they did not make pleasant selection of novel foods or dishes from the allowable class.

February 21, 1887. Dr. CHARLES A. LEALE delivered his retiring address, in which he reviewed the work of the Association, its objects and aims, and paid glowing tributes to the memory of deceased Fellows, chief among whom was the late Dr. Austin Flint.

Dr. JOHN SHRADY, after thanking the Association for honors conferred, referred to the tendency to over-legislation in medical matters as being in the end subversive of individual liberty. He deprecated the fact that there was too much of a reference to the state for the settlement of matters trivial in themselves, but involving a pretext for interference. Special legislation he deplored as being an evil of no mean proportions, especially when entrusted to venal and corrupt politicians who had obtained power through questionable methods. He also alluded to the singular harmony which prevailed in this organisation, and which was due to the democratic ideas of its founders, that in the domain of science every worker should

have an equal voice. In this connection he adverted to the approaching International Medical Congress as affording an opportunity for those in sympathy with the aims of the Association to give it a moral support.

He closed his address with a solicitation of the same aid given to his predecessor, and with the hope that the Fellows would still defend their reputation for industry by good, honest work, to be given even in the spirit of self-sacrifice.

Dr. J. W. S. GOULEY invited an inspection of a rare copy of Bidloo's Anatomy, published in Amsterdam in 1685, which had been recently given by Dr. William Young to the library of the New York State Medical Association. He also exhibited the sac of an old vaginal hydrocele, which, together with the testicle, he had excised. The remaining testicle was in a normal condition; the one removed, on examination, was found to have been softened and worthless.

In executive session, the following resolution, offered by Dr. P. B. PORTER, and seconded by Dr. ISAAC E. TAYLOR in a few well chosen remarks, was unanimously adopted:

Resolved, That the special thanks of this Association are due to the retiring President, Dr. Charles A. Leale, for the able and courteous manner in which he has presided over its deliberations during the past two years; for the high standard which he has maintained in its scientific proceedings; and for his unremitting labors in furtherance of the general welfare.

March 21, 1887. Dr. JOHN SHRADY read a paper, entitled "The Aneurysmal Diathesis," in which he pointed out some of the indications of a predisposition to the condition. He said that every human being had within him tendencies to final decay, which were not the same in all persons. In some, life ceased by decay advancing most rapidly in the circulatory system. They were much more prone to aneurysmal difficulties than others were. There ought to be some way of recognising at once the aneurysmal diathesis, and he would point out some features which he thought were indicative of it. He would not approach the debatable ground of syphilis, nor even of rheumatism, as causes of aneurysm. These two diseases, at best secondary in their workings, were referable to disturbed nutrition, and they should not be looked upon as causing the aneurysmal tendency any more than dropsy should be regarded as a disease, pure and simple. In a general way, he said, the term sanguine temperament could be applied to persons who had a tendency to aneurysm. The development of the heart, and of the circulatory apparatus as a whole, also of the emotional nature in these persons, tended to an overstraining of the arterial system. The heart was large, perhaps somewhat hypertrophied from its earnest and continued work; it beat rather rapidly and forcibly. The build was square; the frame gained in height from the body rather than from the thighs; the neck was bulky and short,

the face heavy and massive, the nose bulbous. The subject was muscular, with a relatively poor development of the osseous system. This diathesis might be cultivated by athletic sports, primarily overtaxing the heart, and secondarily the remainder of the circulatory system. The diathesis might be latent from lack of circumstances to awaken it. The absence or retardation of the emotional temperament might altogether avert the final catastrophe. Aneurysm did not occur in early life, when the glandular system was undergoing the process of evolution, and when one's vocation had not intensified and kept up the tendency to this condition. The resiliency of the organs at this time was greater, and recovery from undue taxation of the circulatory system was much more prompt than in later years.

Dr. J. W. S. GOULEY objected to the term hypertrophy when applied to enlargement of the heart, of the muscles, etc. It meant over-nourishment, whereas, there was only just sufficient nutrition to meet the needs of the enlarged organ. It was better to use the simple term enlargement, rather than hypertrophy, as where, in dermatitis, inflammation developed, and finally decay or atrophy resulted.

Dr. A. L. CARROLL thought that inasmuch as enlargement of the heart was due to increased nourishment, it was not improper to speak of the condition as one of hypertrophy. If it were not enlarged, a lesser degree of nourishment would be required.

Dr. A. P. DUDLEY presented the uterine appendages of a woman whom he had kept under observation and treated by various other measures for a year without marked benefit. A peculiarity in the case, and one which had rendered the diagnosis obscure, was the fact that one tube, after leaving the uterus in the usual direction, became deflected downward, and returned to the side of the uterus lower down, where it spread over the enlarged and misplaced ovary. This relation of the tube and ovary would have made a cure by other measures than removal impossible. The specimen was examined with much attention by those present.

Dr. C. A. LEALE presented specimens of two new antiseptics and disinfectants—glycozone and solution of peroxide of hydrogen—both of which he had used with satisfactory results.

In executive session, Dr. GLOVER C. ARNOLD proposed the following addition to the By-Laws, Article I, section 3: After words "in the county of New York," in third line of section 3, add "and those residing adjacent thereto, the latter to be styled non-resident members, who shall not vote, nor be required to pay dues or assessments."

April 18, 1887. Dr. THOMAS C. TAYLOR read the report of a case of "Cancer of the Pancreas," with infiltration of the omentum and walls of the stomach along the greater curvature, occurring in a female of thirty years. In this case, interesting on account of its infrequency and obscu-

rity of diagnosis, three elements of recognition regarded as essential were wanting—jaundice, oedema, and fat in the alvine discharges. The reporter thought Dr. DaCosta's method of diagnosis by exclusion the most feasible, although in the present case the necropsy after all revealed at last the true nature of the lesion. The question of prolonging life by surgical interference naturally arose, and Bilroth's two cases were of much interest. That surgeon had made a partial resection of the organ, removing the tail in one and a portion of the head in the other case, without, of course, injuring the duct. How long the two patients lived is not stated, although the operations were successful. Dr. Taylor also exhibited the specimen.

Dr. W. T. Lusk read the report of "A Successful Case of Caesarian Section after Sänger's Method."

The patient, aged 24 years, was admitted, March 21, to Bellevue hospital, Dr. Lusk's service, on account of deformity of the pelvis, dating from hip disease in childhood. When eleven years old she was discharged cured from a Dublin hospital, but during her pregnancy she noticed a suppurating discharge from the old sinus. Dr. Lusk, on making an examination the day after her admission, found to his surprise that labor had already begun. The pelvis was a Naegele oblique, with very contracted diameters. With Drs. Isaac E. Taylor and H. J. Garrigues as consultants in approval, he decided to perform Caesarian section at once, for the reason that the danger from craniotomy would be actually greater with pelvic diameters such as hers.

A median incision opened the abdominal cavity; the uterus along with the intestines was turned back over the abdomen, and the mass was held out of the way by means of towels. A rubber tube was then girdled around the womb, and an incision two inches long made in its lower segment, the opening thus made having afterward been increased by the scissors to five inches. The incision was almost entirely bloodless. The child presented L. O. A., and on extraction was cyanotic, but was promptly recuscitated. The placenta and membranes were readily detached by the fingers from the uterine walls. In closing the wound thirty-four carbolised silk sutures were used, sixteen deep, and eighteen superficial; in the deep sutures, the mucous membrane of the organ was avoided. When the rubber band was removed, blood slowly returned to the pallid organ, which changed from a delicate rosy hue to a deep purple. A slight oozing was then observed at one point, and after its cessation the uterus was returned to its position and a drainage-tube put behind it. Silver wire sutures closed the abdominal wound, and the patient was admitted by those present to have been in excellent condition at the end of the operation, which lasted one hour and a quarter.

For three days the temperature never rose so high as 100°; then there was a little tympanites, and it went up above 101°, but a Seidlitz powder

had the effect of promptly reducing it. On the fifth day the drainage-tube was removed. Immediately after the operation the discharge from it was stained with blood, but it soon became colorless. Dr. Lusk thought that the tube was not really needed in this case at all, but at the same time there was a certain feeling of security in having it. On the sixth day there was some oozing from the orifice left by it. At the end of a week the abdominal suture was removed, and at this time the temperature would usually go up to about 100.5° in the evening, falling again by morning. On the ninth day some fluctuation was discovered at one point in the line of the abdominal wound, and a little pus was evacuated, after which the temperature became nearly normal. At the end of two weeks, however, the temperature suddenly rose to nearly 103°. No trouble whatever could be detected about the abdomen; and as the patient complained of pain in the region of the right hip, an examination revealed an accumulation of pus in the site of the old sinuses. After that time the patient continued in excellent condition, and the child was in equally good condition.

Dr. H. M. SILVER, who had charge of the case, said that altogether the patient compared better in physical condition than any other case of laparotomy observed by him during his hospital service. As an argument against undue delay, he referred to the nineteen cases of dwarfs tabulated by Dr. Robert Harris, of Philadelphia, in 1878, in which only one mother and five children were saved. In all these cases the operation was a last resort.

In reply to a question regarding the relative merits of Porro's or Tait's operation as a safeguard against future pregnancies, Dr. LUSK said statistics showed that with the Sänger operation, more or less modified, there were over seventy per cent. of recoveries, but only forty per cent. in Porro's. In regard to Tait's procedure, the additional risk to the patient was not advisable, the extremely vascular condition of the parts constituting a serious objection.

Dr. C. S. WOOD said that he had performed craniotomy three times, and all would agree with him that it was disagreeable, indeed repulsive. Unfortunately, the showing, according to statistics, was much less in favor of laparotomy than of craniotomy. In his cases of the latter class, one of them had terminated fatally. Yet in one of the successful cases he was unexpectedly called upon for the operation, and was unprovided with the proper instruments, and could command none without a long delay, so he manufactured in a rough way what suited his purposes from some shoemakers' tools. He was one who believed that the mother should be saved at all hazards; and as craniotomy seemed to give her the best chance, he should resort to it in preference.

Dr. LUSK said that in the Caesarian section the mortality was without doubt large; but that it was resorted to only when the mother was in a

dying condition, and when other methods of delivery, craniotomy included, had failed. Then, again, a rough and careless way of operating had also been the rule. But even with these disadvantages, a few mothers had recovered. The operator ought to make out the pelvic diameters, and take into account the risks of craniotomy as well as laparotomy. Having decided upon Caesarian section, he should prepare with deliberation and fully carry out his antiseptic determinations. The cases of Leopold, who has operated ten times with only one death, and who states that in the light of his later experiences he believes that he could now have saved this case also, should at least encourage us. Very few obstetric surgeons can show a successful result of ninety per cent. in their craniotomies. Within the last eighteen months Harris has collected forty cases of Caesarian section with seventy-three per cent. of recoveries, while the best results of craniotomy show only sixty per cent. of recoveries. Other operators than Leopold have reported five or six consecutive cases without a death. One great reason of the gratifying success of the modern operation is the use of the rubber ligature, which, by preventing haemorrhage, enables the surgeon to remove the contents of the uterus in a very deliberate manner, and to bring the edges of the wound together with the greatest accuracy.

In reply to a question from Dr. GOULEY in regard to his opinion of the operation of laparo-elytrotomy in these cases, Dr. Lusk said that this procedure was adapted to special cases, namely, when the head was arrested at the brim and the cervix was already dilated or in a dilatable condition. If, however, we were obliged to pass the forceps through an undilated cervix, it was a very serious operation. In case, therefore, we desire to operate early, we have to do it at a time when the conditions favorable to laparo-elytrotomy do not exist. Of the twelve cases of this operation which have been reported, six died because success was impossible from the existing conditions.

Dr. JAMES R. MACGREGOR exhibited a portion of a "penis amputated for epithelioma." He had operated with the object of preventing the subsequent constriction of the urethra in the stump, and so far the result was satisfactory. He thought that the chances for the return of the growth were rather fair than otherwise.

Dr. J. W. S. GOULEY said it was of interest that in epithelioma of the glans or prepuce there is always antecedent balanitis or balano-posthitis; and most cases occur in persons who have chronic balanitis, this condition being chiefly due to lack of cleanliness. In such cases epthelioma develops rapidly, and soon involves both the mucous membrane and the corpora cavernosa. In his experience, amputation, as usually resorted to in these cases, is insufficient, and is likely to be followed by a more or less rapid recurrence, which always commences at the end of the stump. Atresia urethrae is also likely to be a very unpleasant consequence of

the operation; and he related a case in which, although there was no return of the cancer, the patient died within two years from pyelo-nephritis due to atresia thus produced. In one case of amputation for epithelioma, he first used the écraseur to break up the cavernous bodies. Then, leaving the urethra fully three quarters of an inch longer than the stump, he fastened it to the free extremities of the cavernous bodies. On account of the frequency of recurrence, he determined to excise the whole penis in his next case; and in April, 1878, he did this operation on a patient fifty years old. He dissected out the entire organ, without opening the cavernous bodies, and removed the crura and all. About one half of the cavernous bodies had been invaded by the growth. The patient was discharged cured within two months, but he knew nothing of the subsequent history of the case. It seemed to him that such a radical operation was the best safeguard against recurrence; for if the slightest deposit remained, the growth would recur. In the majority of cases it was not only justifiable, but the most proper means to adopt. It is not a formidable operation, and in his case the patient made a rapid recovery.

Dr. BRYANT referred to three cases of amputation of the penis in his own practice. In two, the operation was done for cancer, involving the glans and anterior portion of the organ; and in the third, for general carcinoma, involving not only the penis, which was in a constant state of priapism, but the whole system. He believed that the entire removal of the penis is the only ultimately safe procedure. But if the growth be very slight, it might be allowable to consult the patient's wishes, and if he object, make the amputation prae-scrotal.

In executive session, the additions to the by-laws proposed at the previous session were, on motion of Dr. Gouley, unanimously adopted.

May 16, 1887. Dr. IRA B. READ presented a paper entitled "Tuberculosis of the Joints," in which he gave the history of a case where one joint after another had succumbed to some subtle undermining influence. The points of the case, briefly given, are as follows:

A male, aged sixty-two years, in the autumn of 1882, complained of lameness in the left shoulder, which gave him trouble in putting on or off his coat. He thought it a slight rheumatic attack, and paid but little attention to it. The lameness and soreness increased, and in May, 1883, there was a discharge of pus and blood from an abscess formed in the shoulder joints. In July he had considerable fever. The abscess opened on the posterior aspect of the joint, and subsequently in the anterior surface of the arm, about three inches below the joint. These abscesses were open and discharging for eight months, when they healed. There was no exfoliation of the bone, and but little if any impaired motion of the joint. In the winter of 1884 the ankles began to be sore and lame. In about two months this feeling passed away, but he had a "general bad feeling," as he described it, and a great deal of headache. There

was loss of appetite, and it was with a feeling of effort and exertion that he attended to any of his duties. This general condition continued through the year, and in the winter of 1885 the ankles again began to swell and pain him; abscesses formed in both, and in May, 1885, discharged pus and blood. In the summer of 1885 an abscess formed on the great toe, which discharged for some weeks. The right ankle healed in about six months, with the exception of two small openings, through which there is occasionally a discharge of thin, purulent fluid. The left ankle is still open and discharging pus, although not very freely. The rough surface of diseased bone can be detected by means of the probe, but there has been no exfoliation. In the fall of 1886 the knee began to swell and become painful, so that he could not walk. Up to this time he had attended to his business daily, with few interruptions. Since the beginning of the knee trouble he has been confined to the house. This is the history of the case as given by the patient himself. In the latter part of February I was asked to take charge of the case, and have had it under observation since. The affected knee was at this time nineteen and a half inches in circumference; the other knee fourteen inches. The skin was tense and glistening, the patella forced considerably outward. The swelling is marked on the internal and external aspects of the knee, and for five or six inches above and below the patella. It is soft and yielding to the touch, without perceptible fluctuation. There are one or two painful spots, but pressure is generally well borne. Up to this time he had been sitting up every day, and on taking charge of the case I insisted on his going to bed and remaining there. A gentle pressure by means of a woollen bandage was applied to the limb from the toes to the lower third of the thigh, and he was kept in bed. The opening in the ankle was dressed with iodoform and a covering of oakum, and absolute rest insisted on and obtained. Syr. of iodide of iron and cod liver oil were given, but the cod liver oil had to be discontinued, as it was not well borne on the stomach. Having no appetite, milk, milk punch, eggs, and everything that would tempt him to eat, were ordered. After two and one half months his present condition is as follows: He has a good appetite, and his food digests well; he feels stronger and more hopeful; sleeps better. The leg can be kept perfectly straight in bed, and there is much less spasmodic jerking, which has been a painful and troublesome symptom. Circumference of knee, eighteen inches.[1]

Dr. J. W. S. GOULEY was not quite prepared to give in his adhesion to Dr. Read's view of the case. There were many doubtful points about it,

[1] The following note from Dr. Read, under date of September 22, completes the history of the case:

"A few days after the reading of the above paper, I opened the knee, and found about half a pint of pus, deep seated. The capsular ligament was seriously affected; the ends of the bones of the leg and thigh grated together when moved. The cavity was washed daily with a solution of bichloride, 1 to 4,000, and dressed with iodoform and balsam of Peru. For a few days he seemed to improve, but gradually became more wasted, taking very little nourishment. Granulations formed in the wound, and the discharge of pus almost ceased, but there seemed to be no foundation on which to build, and his general condition became worse daily. His brain began to show evidence of disease; his mind wandered, and, although recognising those who came into the room, he was unable to carry on any coherent conversation. He continued in this rapidly failing condition until the 9th of August, when he died, a mere skeleton. He had had almost constant diarrhœa, and refused nearly all food. Taking all the history of the case into consideration, I have no doubt whatever of the tuberculous character of the disease, and that it finally attacked the intestines and the brain."

especially when the absence of any pulmonary complication is taken into account, and yet he would not take the responsibility of naming the malady.

After some farther remarks by Drs. MACNAMARA, JANEWAY, and CARROLL, and the answering of certain questions, Dr. Read closed the debate.

Dr. LAWRENCE J. MACNAMARA read a paper on "Respiratory Therapeutics in the Treatment of Phthisis Pulmonalis." About four years ago Dr. MacNamara's attention was attracted to an inhalation apparatus consisting of a funnel-shaped glass globe, with two openings, one for the attachment of the metallic disc holding in its centre the spray tubes, and the other, immediately opposite, terminating in a long mouth-piece. The fluid to be atomised was placed in the globe, and a rubber tube used to connect the fluid with one of the spray-tips, while the other tip was connected with a cylinder of compressed air. The globe rested on a bracket capable of being raised or lowered as required. The patient, standing with head elevated, took the mouth-piece in his mouth, and inspired, allowing the expired air to escape through the nostrils. His first impression was that this apparatus was of similar nature to many others tried before, and found wanting; but experience in its use had convinced him of its practical utility. The compressed air is made to pass through a large cylinder into a smaller one before reaching the spray-tubes, and by this means, the valve being kept partly open, constant, steady pressure could be maintained in the smaller cylinder, with the effect of constantly producing the same character of spray. Dr. MacNamara has used this apparatus for nearly eighteen months, having begun to employ it with the idea that he could no doubt relieve many of the distressing symptoms in a considerable portion of his phthisical patients; but, noticing the marked amelioration of the condition in the majority of instances, he determined some months ago to keep more exact records of temperature, pulse, respiration, and expectoration, noting especially the presence or absence of bacilli, and the effect of the treatment on them. All the cases were in private practice, and the whole number treated was between fifty and sixty; but, as nearly one half had the treatment but a few times and at irregular intervals, they were excluded from the account. The cases considered embraced almost all the forms of phthisis except the disease in the stage of excavation, and the patients remained under treatment from one week to nearly eight. Under this method of treatment the cough and expectoration diminished, and in those treated the longest the cough quite disappeared. The bacillus was found in every one of these cases, and was always present, even to the termination, with the exception of one instance, although the number of bacilli was visibly diminished. When the treatment was discontinued, however, the symptoms had in most cases disappeared. One illustration

can be described in detail, that of a young married woman twenty-three years of age. He placed her on iron, quinia, and strychnia, and gave her daily inhalations of the following solution:

℞	Sodii bicarb.	
	Sodii biborat.	aa ʒi.
	Acid. carbolic.	gtt xx.
	Glycerinae	f ʒj.
	Listerine	f ʒij.
	Aq. destillat.	f ʒxvj.

When this treatment had been continued for nearly two weeks, the expectoration was found to have increased, but its purulent character had changed to one more mucoid. The severity of the cough was lessened, and the general health had begun to improve. She was then placed on an inhalation of the dark extract of pinus Canadensis, with Lugol's solution (one to five drops to the drachm), carbolic acid, and distilled water. She remained under treatment regularly for about three weeks longer, and then refused to continue the daily inhalations, although consenting to come to the office two or three times a week. At the time daily treatment was discontinued, repeated examinations, made with the greatest care, failed to discover any evidence whatever of the presence of the tubercle bacillus. Three months afterwards, also, the same rigid search for bacilli gave a negative result.

Dr. EDWARD G. JANEWAY maintained that even direct contact was not always successful, as he had known of instances where the germicide was brought into relationship with an unquestionable tuberculous ulcer, superficial at that, without effect, the application being both thorough and persistent. Then, again, the diagnosis of a pulmonary cavity of small dimensions, or a number of them, was not so easy; the autopsy often threw the only true light upon the lesion. Many cavities or breakings down were only demonstrable after death. He thought that we should not get too far away from our moorings in the matter of constitutional treatment, and of the adjuvants, which he hoped would not go out of fashion altogether.

Drs. BIGGS and CARROLL continued the discussion, particularly with reference to the bacillus tuberculosis, and the part sustained by it in the causation of the disease.

Dr. MACNAMARA then closed the debate with the remark that his work, notwithstanding its to him somewhat satisfactory character, was yet tentative. He said that he could not claim everything for this method of treatment, but that if more fully developed, with perhaps a change of the agents here and there, it might be still more promising. He wished it to be understood that he was always open to conviction.

Dr. E. G. JANEWAY presented specimens from two cases involving

unusual difficulties in diagnosis. The first was one of thrombosis of the basilar artery, with acute softening of the Pons Varolii, probably of syphilitic origin. The symptoms during life were maniacal delirium, followed by an increasingly comatose condition. The second was one of slight and somewhat diffuse tuberculosis of the lung, with tubercular ulcerations of the intestines, fatty degeneration of the heart, liver, and kidneys.

Dr. A. L. CARROLL presented specimens from a man sixty years of age, who for two weeks before death showed rapid and extreme changes of temperature, with bed-sores as a complication. At the autopsy the apex of the left lung was found to have the fibroid element of the pulmonary tissue markedly increased, while the rest of the lung was almost diffluent. The spleen was enlarged, softened, and presented an embolic infarction.

June 20, 1887. Dr. CHARLES A. LEALE read an interesting and statistical paper on "The Prevention of Chronic Diseases among the Children of New York City." The work of visitation under the supervision of St. John's Guild was performed by six physicians chosen from among those familiar with the English, French, German, Italian, Spanish, and Hebrew languages. The work began on the 3d of August, 1886, and ended on the 13th of September of the same year. During this time 3,659 families were visited, representing 7,146 adults and 10,086 children. Of the adults there were found sick 217, and of the children, 3,376. The sanitary condition of the premises was reported as follows: 699, good; 2,097, fair; while 863 families were living in places unfit for human habitation, or surrounded by conditions that were utterly bad. There were distributed 6,312 free excursion tickets on the Floating Hospital belonging to the Guild, mothers and children being well cared for in the matter of food. Beside these, twenty-four children, very sick and deserving, with their guardians, were granted the privileges of the beach and grove for a week or two at the Sea-side Nursery on Staten Island.

In this paper Dr. Leale also recited many instances of overcrowding, with filthy environments and deplorably faulty hygienic conditions, which invited disease of the most loathsome and contagious character. Bad ventilation he gave as the rule, water-closets no better than open cesspools, and criminal landlordism as a general crown to all the evils. The writer deprecated the well intended but often perverted charity of the public, which demanded ostentation rather than real benefit, and alluded to the efforts of those who promoted "Fresh Air Funds," etc., as being steps in the right direction. The poor, he maintained, were often deterred from seeking benefits through a sense of pride, and therefore themselves required to be sought out. Practitioners, in the present age, were to be something more than mere medicine-givers: they were ex-

pected to insist upon the importance of pure air, good food, and proper raiment. This gospel, too, they must needs preach even to the rich. They should look to the sequelae of diseases, such as measles, scarlatina, rheumatism, and the like.

Dr. A. L. CARROLL spoke at length concerning the influence of density of population upon the death rate as computed by Farr, especially as shown in the mortality of children under five years of age, and pointed out that in the poorer wards of New York the overcrowding of population was greater than in any other place in the world. He feared that no efforts of physicians or philanthropists could materially reduce the evil described by Dr. Leale unless the public authorities took steps to limit condensation of population, and to provide small parks as breathing places in the denser districts.

Dr. S. B. WYLIE MCLEOD referred to the virtual powerlessness of the city government to redress the grievances of the poor. He believed with the author of the paper that the cultivation of a healthy public sentiment was the only true road to reform. It was the boast of our civilisation that we regarded motives rather than acts; it should be our aim, therefore, to obey rather than to evade all laws having for their object the advancement of the species.

Dr. LEALE, with thanks for the attention given to his paper, then closed the discussion with farther remarks upon well intended but futile public benefactions.

Dr. GEORGE T. HARRISON read a paper entitled "Indications for the Induction of Premature Labor," in which he maintained that pelvic deformity of a moderate degree, presenting such obstacles to delivery at full term as may jeopardise the life of the child, *e. g.*, the flat pelvis, having a conjugate diameter of 7½ centimetres, or 7 centimetres at the extreme limit, rendered the procedure imperative at the thirty-sixth week, or exceptionally at the thirty-fourth week; that against these conditions for success there were embarrassments, namely, (1) the knowledge of the exact week of gestation, so that the child's chances may not be destroyed by prematurity; (2) the true measurement of the conjugate diameter; and (3) the relative size of the foetal head.

Another indication for the induction of premature labor, he also maintained, was the existence of maladies endangering the mother's life, such as conditions of inanition, eclampsia (threatened or existing), and an excessive degree of oedema and transudation into the serous cavities.

A third indication was deducible from the death of previous children at a certain period of gestation, not far removed from the end of pregnancy, as in some cases of nephritis gravidarum, maternal anaemia, change in the umbilical cord or placenta as learned from the patient's former experience, and the probable death of the mother from dangerous or incurable diseases before the end of gestation. Much, he said, was

not to be expected from the syphilitic taint, the rule being, according to Kassowitz, that the foetus dies in each ensuing pregnancy somewhat later. It is rare that diseases of the heart or lungs give an indication for the operation, though they may occasionally do so.

The paper was discussed at length by Drs. J. HARVIE DEW, S. B. WYLIE MCLEOD, CHARLES A. LEALE, J. P. GARRISH, and others.

Dr. H. M. BIGGS presented, on behalf of Deputy Coroner Jenkins, the specimens from a case of Ruptured Aortic Aneurysm. The rent involved the junction of the transverse and descending arch of the aorta, and the haemorrhage entered the left lung. There were also indications of an acute endarteritis of the aorta, and of the beginning of a small aneurysm near the orifice of the right innominate artery.

Dr. C. S. WOOD spoke of a similar case, where the death was equally appalling and sudden.

JOHN SHRADY, M. D., *President.*

KINGS COUNTY MEDICAL ASSOCIATION.

FIRST ANNUAL REPORT.

This Association held its first public meeting on April 5, 1887, with an attendance of about thirty members and twenty guests. The place of meeting for this and two successive sessions was in a large audience room over the Dime Savings building, at the corner of Court and Remsen streets. At this meeting was adopted a set of by-laws that had been carefully considered by the Organising Committee, and which included certain features that were novel and yet seemingly conducive to the scientific interests of the organisation, while not overlooking the cultivation of sociality. These by-laws will be consulted with interest by members of the profession who may have in hand the duty of launching any kindred society. The method of electing officers is based upon the "Hare system" of voting, and the major part of the routine business of the Association is transacted through its Executive Committee, so that the public meetings are not cumbered with parliamentary and non-scientific discussions.

At this first meeting was read the story of the initiatory steps leading up to the establishment of this new society. Of this the following abstract is given: As the result of a number of private consultations of certain members of the Fifth District Medical Association, it was concluded to call a meeting of the resident membership of that Association for February 7, 1887. This gathering was duly held at the residence of the late Dr. J. C. Hutchison, on whose motion Dr. E. R Squibb was called to the chair. Nineteen physicians were present. The chairman stated the purposes of the meeting, emphasising the position in which he and many other members of the profession of Brooklyn had been placed by the unfortunate dissensions upon ethical principles in the older medical societies of the state. A number of prominent physicians had expressed their conviction of the need of a new centre of medical interchange for this locality, with meetings of greater frequency and regularity than those of the District Association, and with restored ethical relations to the general profession of this state and of the United States.

The sentiment of this meeting was virtually unanimous in favor of inaugurating a new society, and resulted in the appointment of a Committee on Organisation.

On February 23d another meeting was held, at the house of Dr. E. R.

Squibb, attended by twenty-four physicians residing in Brooklyn. These physicians decided to unite themselves into a new organisation, and adopted a code of by-laws in harmony with those of the State Medical Association and the American Medical Association. Officers were chosen to conduct the affairs of the current year. The names of thirty-one physicians as constituent members were subscribed to the by-laws at the time of the calling of the first regular public meeting, in April, 1887.

The scientific business of the April meeting was a discussion of Oil of Wintergreen or Oil of Birch, introduced by a paper by the President, Dr. Squibb; discussion by Mr. Casamajor, the eminent chemist, and Drs. Bierwirth, McCollom, Paine, and Sullivan. At 10 o'clock the Association adjourned, by limitation according to by-law, to an adjoining room, to partake of a simple refection, provided by the Executive Committee.

At subsequent meetings, held in May, June, and October, were presented scientific papers, chiefly of a therapeutic character, and volunteer oral communications concerning cases of present interest to the several reporters. A paper on Hypnotics, by Dr. Avery Segur, was followed by one by Dr. Lloyd, and they were discussed by Drs. J. C. Shaw (present by invitation), Bierwirth, Rochester, Squibb, Fessenden, Ostrander, and Rushmore. Veratrum Viride as a Therapeutic Agent was the subject of a paper by Dr. J. D. Rushmore; discussion by Drs. E. R. Squibb, C. Jewett, Watt, Thayer, W. H. Williams, Trent, Segur, Lloyd, McCollom, and others. The subject of Aperients was introduced by Dr. Squibb's paper, setting forth the results of some parallel observations with Buckthorn and Cascara; discussion by Drs. Segur, McCollom, Gardiner, Rushmore, Rochester, Vanderveer, Lloyd, and others. Drs. E. R. Squibb and T. M. Lloyd considered, respectively, the chemical and clinical aspects of Antipyretics at the November meeting. The later meetings of the Association have been held at Everett hall, 398 Fulton street, and to this address may be sent communications designed to reach the public meetings or officers.

The first death in the number of the constituent members, that of Dr. J. C. Hutchison, took place July 17, 1887. This was a severe loss, and one little expected at the time of holding the initiatory meetings, the first of which was held under his roof. It is no exaggeration to say that in his departure one of the chief pillars of our new edifice has been taken away. An obituary memoir concerning this most useful and revered physician has been prepared by his former associate in practice, Dr. J. D. Rushmore, and appears in another part of this report. In all probability Dr. Hutchison would have been chosen the first presiding officer of this body if he had not very decidedly declined to be named in that capacity, a pressure of other duties and the insidious approach of disease impelling him to that decision. He, however, gave much thought and valuable

time to the inception and constitution of this Association, and was present at its inaugural public meeting.

President—EDWARD R. SQUIBB, M. D.

Vice-President—AVERY SEGUR, M. D.

Recording Secretary—RICHARD M. WYCKOFF, M. D., 532 Clinton Av.

Corresponding Secretary—WILLIAM G. RUSSELL, M. D., 165 S. 9th St. (E. D.)

Treasurer—JOHN R. VANDERVEER, M. D., 301 Carlton Av.

ELECTED MEMBERS OF THE EXECUTIVE COMMITTEE.

JOHN D. RUSHMORE, M. D., term expires in January, 1891.
WILLIAM MCCOLLOM, M. D., term expires in January, 1890.
ARTHUR R. PAINE, M. D., term expires in January, 1889.
GEORGE WIEBER, M. D., term expires in January, 1888.

MEMBERSHIP, NOVEMBER, 1887.

J. S. Andrews,
G. W. Baker,
L. Barkan,
A. N. Bell,
S. H. Benton,
J. C. Bierwirth,
E. S. Bogert,
J. A. Cochran,
J. F. Conway,
T. P. Corbally,
J. Creamer,
J. M. Creamer,
W. J. Doyle,
F. Edmister,
S. Everson,
J. F. Feeley,
B. F. Fessenden,
W. F. Gardiner,
J. C. Hutchison,[1]
J. A. Jenkins,
N. W. Leighton,
T. M. Lloyd,
W. McCollom,
A. J. C. Minard,
C. L. Mitchell,
V. Morse,
G. A. Ostrander,
E. W. Owen,
A. R. Paine,
V. A. Robertson,
T. M. Rochester,
J. D. Rushmore,
W. G. Russell,
A. Segur,
W. A. Shepard,
N. B. Sizer,
E. H. Squibb,
E. R. Squibb,
C. O. H. Steinke,
J. D. Sullivan,
W. H. Thayer,
J. H. Trent,
J. C. Vanderveer,
J. R. Vanderveer,
W. Waterworth,
J. Watt,
G. Wieber,
W. H. Williams,
R. M. Wyckoff.

By order of the Executive Committee,

RICHARD M. WYCKOFF,
Recording Secretary K. C. M. A.

[1] Deceased.

ANNUAL REPORT OF THE COUNCIL

AND

MINUTES OF THE SESSIONS OF THE COUNCIL,

FOR THE YEAR 1887.

The Council met in called session at Washington, D. C., on Wednesday, September 7, 1887, at 7 : 45 P. M.

Present: Drs. Clark, Ferguson, Gouley, Hinton, Jamison, Porter, Ross, and Sharer.

The President being absent, Dr. Sharer was called to the chair.

The following applicants were reported as having been appointed Fellows by circular vote, viz.,—

B. J. Preston, Mary W. Case, Anna Lukens, Charles G. Steele, S. Case Jones, J. P. Brown, T. H. Squire, Charles R. Gill, B. A. Church, M. L. Ford, Daniel J. Chittenden, F. W. Higgins, J. G. Truax, Frederick Wm. O'Brien, Selden J. Mudge.

The following applications were received, and the applicants duly appointed Fellows:

Joshua J. Sweet, of Unadilla, Otsego County; Henry B. Shaw, of New York city; George M. Cady, of Nichols, Tioga County.

Memoirs of Drs. Christopher R. McClellan and Eugene Lauer were received, and referred to the Committee on Publications, for printing in the volume of Transactions.

After an informal discussion relating to the financial condition of the Association, the Secretary was directed to prepare an amendment to the by-laws, increasing the annual dues from three to five dollars, and to accompany the same with a statement showing the necessity for such a change.

Adjourned.

E. D. FERGUSON, *Secretary.*

The annual meeting of the Council was held at the residence of Dr. Isaac E. Taylor, the President of the Association, in the city of New York, on Monday, September 26, 1887, at 6 P. M.

Present: The chairman, Dr. Taylor, and Drs. Abell, Arnold, Avery, Dodge, Ferguson, Gouley, Hinton, Leale, McEwen, Sharer, Wilson, and, later, Carroll.

The following applicants were appointed Fellows:

John Edwards, Fulton County; Thomas J. Acker, Westchester County; John E. Comfort, New York County.

The following was adopted as the sense of the Council:

At the organisation of the Association the annual dues were fixed at three dollars, with the understanding that an effort would be made to conduct the affairs of the Association on that basis, and in case the amount should prove inadequate, the same could be made larger by an amendment to the by-laws. After a trial of four years, the fact is now apparent that it will be necessary to increase the annual dues, or change the style of publication of the volume of Transactions. This necessity was foreshadowed last year in an assessment, but in view of the trouble and possible misunderstanding connected with an assessment, the Council have decided to make none, but to advise an amendment to the by-laws making the annual dues five dollars. It is proper to add that five dollars are the usual annual dues in state medical organizations.

Therefore, *Resolved*, That Article VI, Section 1, of the By-Laws be so amended as to make the annual dues five dollars.

The Treasurer made an informal report, which was to be followed by a formal report at the next meeting.

The Director of the Library reported informally that there were 4,600 volumes in the Library: the formal report to be presented to the Association.

The following committee was appointed to report at the next meeting of the Council on the death of Dr. Alonzo Clark:

Drs. A. L. Carroll, C. A. Leale, G. C. Arnold.

A gift of $50 was received from Dr. J. W. Lockwood, of Columbia County, through Dr. Thomas Wilson.

On motion, the Secretary was directed to return the thanks of the Council to Dr. Lockwood for his gift, and the amount was directed to be placed to the credit of the Building Fund.

The chairman of the Committee on Publications reported as follows:

REPORT OF THE COMMITTEE ON PUBLICATIONS FOR 1886.

The third volume of the Transactions was issued in June last, and will, it is hoped, be found to compare favorably with its predecessors in both scientific value and mechanical execution.

In order to reduce the expense of publication, it was deemed advisable by the committee to discontinue the practice of stereotyping the pages; and, although the edition is larger by 200 copies than hitherto, a considerable sum has thus been saved, the actual price of the work having been $1,414.75. It was farther resolved, with the approval of the Council, to embellish the volume with the portraits of three honored Founders of the Association,—Austin Flint, Frank H. Hamilton, and John P. Gray,—lost from our Fellowship by death during the preceding year. With this

additional outlay, the total cost of the edition was $1,588.75. The incidental expenses of distribution and extra copies of the amended Constitution and By-Laws and Lists of Fellows are set forth in the Treasurer's report.

Any Fellow of the Association, not in arrears, may procure copies of the current volume in addition to the one to which he is entitled, or of the preceding volumes, for $2.50 per copy, by applying to the Treasurer.

ALFRED LUDLOW CARROLL, *Chairman.*

September 26, 1887.

At the suggestion of the chairman of the Committee on Publications, the Secretary was directed to call the attention of the authors of papers to the note in the programme on the preparation of papers for publication.

The thanks of the Council were then extended to Dr. Carroll for his laborious, thorough, and scholarly work as Editor of the Volume of Transactions.

Dr. E. S. F. Arnold then verbally reported the work done during the past year in cataloguing the Library, and in binding volumes of medical journals.

E. D. FERGUSON, *Secretary.*

The Council met at the Carnegie Laboratory, Thursday, September 28, 1887, at 8 P. M.

Present: Dr. Isaac E. Taylor, in the chair, and Drs. Abell, Arnold, Carroll, Colvin, Ferguson, Hinton, and Leale.

The following applicants were appointed Fellows:

Frank C. Drake, Oneida, Madison County.
Pascal M. Dowd, Oswego, Oswego County.
C. M. Briggs, Fairport, Monroe County.
George D. Bradford, Homer, Cortland County.
Nathan G. Bozeman, New York, New York County.
J. E. Casey, Mohawk, Herkimer County.
F. A. Jewett, Brooklyn, Kings County.
J. R. Vanderveer, Brooklyn, Kings County.
Dwight L. Hubbard, New York, New York County.

The Treasurer reported that on September 27, 1887, there was a balance to the credit of the Building Fund of $465, and cash in the General Fund, $240.79.

The bill of the Angell Printing Company for programmes, etc., to the amount of $112.36, was audited and ordered paid; also the sum of $1.80 disbursements to Dr. Glover C. Arnold.

Memoirs of Dr. J. C. Hutchison, by Dr. J. D. Rushmore, and of Dr. T. F. Rochester, by Dr. George N. Burwell, were received.

The question of the publication in medical journals of papers read before the Association was referred to the Committee on Publications, with power.

Drs. A. L. Carroll, Glover C. Arnold, and C. A. Leale were appointed a committee to secure a memoir of Dr. Alonzo Clark.

E. D. FERGUSON, *Secretary.*

The new Council met at the Hotel Brunswick on the adjournment of the fourth annual meeting of the Association, September 29, 1887, at 5 P. M.

Present: Dr. John Cronyn, President, and Drs. Barnes, Carroll, Ferguson, Gouley, Hinton, Leale, McEwen, and Selden.

The members of the Council in the Fifth District were appointed a Committee of Arrangements for the fifth annual meeting of the Association, with power to add to their number. At the request of the committee, Dr. Glover C. Arnold was added thereto, and made chairman.

It was decided to hold the fifth annual meeting of the Association in New York city, on the second Tuesday in October, 1888.

The members of the Council in the Fifth District were appointed the Committee on Publications, with power to add to their number, and Dr. Carroll was selected as chairman and editor of the fourth volume of Transactions.

E. D. FERGUSON, *Secretary.*

THIRD ANNUAL REPORT OF THE LIBRARY COMMITTEE OF THE NEW YORK STATE MEDICAL ASSOCIATION.

September 27, 1887.

In presenting this, their third annual report, the Library Committee have the honor to say that since the last meeting of the Association the number of volumes has increased from four thousand and twenty-three (4,023) to four thousand six hundred and nine (4,609), a gain of five hundred and eighty-six (586) volumes.

The following is the summary prepared by the acting Librarian, Dr. Edmund S. F. Arnold:

Bound books,	2,523	volumes.
Bound journals,	481	"
Unbound journals,	575	"
Bound duplicates,	631	"
Unbound duplicates,	399	"
	4,609	"

Beside the above, there are many volumes of journals not yet complete, and odd numbers of journals.

The duplicates are for exchange, which can be effected through the Library Committee.

Many of the books presented to the Library since the last report are of great rarity and value.

The capacity of the Library hall is equal to very little more than five thousand volumes. It will, therefore, not be long before the Association will have to look for better quarters.

An appropriation should be made for properly arranging and binding the large and valuable collection of monographs, which represent the thought of the day and the latest improvements in medicine.

The Library Committee take pleasure in making their acknowledgments to Dr. Arnold for his great devotion to the interests of the Library, which he has placed in the most excellent order for use.

J. W. S. GOULEY, *Chairman.*

MEMOIR OF EUGENE LAUER, M. D.

BY W. T. WHITE, M. D., OF NEW YORK COUNTY.

EUGENE LAUER, M. D., died in the city of New York, of diphtheria, October 31, 1886, aged forty years. He was a native of Hesse-Darmstadt, Germany, received his early education at Giesen, and in 1868 was graduated in medicine from the University of Marburg. He served as assistant surgeon during the Franco-German war, and in 1873 came to New York. He was a close student, an acute observer, and worked devotedly in his profession to the close of his life. For the past twelve years he was an active member of the German Dispensary (class of internal diseases), and although enjoying a lucrative practice, he was as prompt with dispensary patients as he was known to be with his private clientèle. His colleagues speak admiringly of his high professional attainments, his integrity, and his modest demeanor.

MEMOIR OF CHARLES CURTIS FENN GAY, M. D.

BY ALVIN A. HUBBELL, M. D., OF ERIE COUNTY.

Dr. CHARLES CURTIS FENN GAY died at his home, 180 Franklin street, Buffalo, N. Y., on March 27, 1887, after a long and painful illness. He was born in Pittsfield, Berkshire County, Mass., January 7, 1821, and was, therefore, at the time of his death, sixty-five years of age. He was the son of William Gay, Jr., and a descendant of John Gay, who came from England to this country in 1650 and settled at Watertown, Mass. Many men of prominence trace their descent to this early pioneer. The mother of Dr. Gay is a distant cousin of the noted Secretary of War at the time of the Rebellion, the late Edwin M. Stanton. She is still living, at the venerable age of ninety-two years.

When Dr. Gay was a mere lad his parents removed to Lebanon Springs, Columbia County, N. Y. His early education was received at select schools in that neighborhood, and at the classical school of Prof. John Hunter, of New Lebanon, N. Y. In 1843 he continued his studies at the Collegiate Institute, Brockport, Monroe County, N. Y. In 1844 he began the study of medicine under the preceptorship of Dr. Joseph Bates, of Lebanon Springs. Soon afterward he went to his native place, Pittsfield, Mass., where he studied under Dr. H. H. Childs, ex-lieutenant-governor of that state. He at the same time attended medical lectures at the Berkshire Medical College of that place. His next course of instruction was in the medical school at Woodstock, Vt. A third course was taken at the Berkshire school, from which he graduated in the fall of 1846. After graduation, he completed his collegiate studies by attending a fourth course of lectures at the Jefferson Medical College, Philadelphia.

Thus unusually well equipped for practice by thorough medical training, Dr. Gay began the work of the profession. He first settled at Bennington, Vt., and afterward removed to Byron, Genesee County, N. Y., in which places he enjoyed his full measure of success. But aspiring to greater fame and enlarged opportunities, he decided to remove to Buffalo, which he did in 1853, where he continued his labors till his death. In 1854 he was married to Sarah A., daughter of the late George W. Tift, who survives him.

Dr. Gay's life in Buffalo was characterized by a power and worth, morally, socially, and professionally, that are seen in few physicians. He was a man of sympathy, geniality, and influence, and these, together with his intellectual attainments, made him a desirable companion and asso-

ciate in private, and a man to whom the public also looked for instruction and service in various ways. From the outset of his practice he advanced rapidly in professional esteem, and soon took a leading position. He was largely instrumental in the organisation of the Buffalo General Hospital in 1855, and became at first one of the consulting surgeons, and three years afterward an attending surgeon, which position he held till 1884. He was a prominent member of the Erie County Medical Society, and of the Buffalo Medical and Surgical Association. He was also a permanent member of the New York State Medical Society and of the American Medical Association. He was always a vigorous and consistent defender of the code of ethics of the American Medical Association, and on the adoption of the new code by the New York State Medical Society, he favored another organisation, and became one of the Founders of the New York State Medical Association. In the summer of 1885 he went to Europe for his health, and attended the British Medical Association as a delegate from this Association.

In 1861 Dr. Gay was appointed by the Union Defence Committee of Buffalo surgeon-in-charge of Fort Porter, and while at this post examined and had surgical charge of the Forty-ninth Regiment, N. Y. V., Col. Daniel D. Bidwell commanding. He was one of the Founders of the Society of Natural Sciences of Buffalo, and was a member of its original board of directors. He was also curator of botany in this institution at an early period of its history. He took especial interest in botany, and his collections were numerous. The Buffalo Surgical Infirmary was organised in 1876, and he was chosen surgeon-in-chief.

Upon the establishment of the medical department of Niagara University in 1883, in which he took an active part, he was appointed Professor of Operative and Clinical Surgery, a position which he held with much credit till ill-health compelled him to resign, when he was made Emeritus Professor of Operative and Clinical Surgery.

For many years Dr. Gay was one of the leading surgeons of western New York, and his skill and advice were eagerly sought in cases of doubt and danger. As a writer he was clear and impressive. He contributed freely to medical literature, by reports of rare and interesting cases, and elaborate papers containing his best thought and the results of his own ripe experience. For some time previous to his death he had been engaged in the preparation of a work on Clinical Surgery, which he did not complete.

In the death of this excellent man Niagara University, various local, state, and national medical societies, and the profession in general, have lost a most esteemed, skilful, and honored associate and confrère, and the domestic and social circle in which he moved a genial, conscientious, sympathetic, and devoted member. This Association, especially, has suffered a deep and irreparable loss.

MEMOIR OF THE LATE CHRISTOPHER RABORG McCLELLAN, M. D.

BY JOSEPH C. HUTCHISON, M. D., OF KINGS COUNTY.

The men of medicine, like those of the other learned callings, are united in various kinds of official association, but the busiest of them have little time—perhaps too little—to make much of such forms of fellowship. The duties of their profession, if conscientiously and skilfully pursued in the love of truth and in the love of humanity, require also the constant study of it. That leaves the doctors few social pleasures and scanty leisure. Too often nothing but a memory and a sense of great sorrow and vacancy are left them when death stills the pulses of one of their number. As they realise that they have parted with a comrade, they feel that they have lost a friend of whom they might have and should have made much, but of whom they did not because their relation to him seemed more of a habit than anything else, until his departure revealed that relation to have been an inestimable privilege.

It was so with the man about whom I am writing and myself. Here he was regarded by my heart and mind as an associate, dear all the time, and sometime to be especially fostered and enjoyed if the hoped-for lessening of the pace of work gave either or both of us the opportunity for doing so. Now that he is gone, and I write about him dead, the thought that fills me is the one that says those who loved him, and whom he loved, cherished him too little, met with him too seldom, learned of him too rarely, while it was possible for them to get all the benefits of his counsel and of his friendship. However, so it was to be. The melancholy and partial compensation is, that humanity gained from his life's constant forces what his friends failed to get by not assiduously placing themselves in the sweep of his uneffusive but masterful personality. His career was so consistent and characteristic, that it casts back on the path of his life a rich light of lesson, encouragement, and example. It is easier to do right when you reflect on the record of right doing, which is the best legacy of this man to his brethren.

I shall outline the main facts of his life, and state some of the principal qualities of this man as I generally recall them, for two purposes: One, the purpose of attempting a merited tribute to his worth, which I am conscious I can only imperfectly discharge; the other, the purpose of

indicating a character in whom duty was supreme, and in whom many sterling qualities shone, and closed in the truthful title of the faithful physician.

Though apparently always of Brooklyn, Christopher Raborg McClellan was a contribution of the South to the life of the City of Churches. He was born in Baltimore, Maryland, October 18, 1813, and his boyhood was passed, and his academic and medical education received, in that state. He was educated at Belle Air academy, in Harford county, in that commonwealth, whence he went to Yale college, and was graduated from that institution in 1833, when twenty years old. The qualifications for college, and the knowledge acquired in college, were less then than they are now; nevertheless McClellan's graduation at relatively so early an age, while it did not necessarily indicate precocity, did indicate habits of study and of clean and earnest living which let neither temptations nor pleasures interfere with his duty. The fact not only warrants the inference, but his whole subsequent life confirms it. From Yale he at once went to the office of Dr. John Buckler, a physician of Baltimore, as a student of medicine, and entered also the University of Maryland in the same capacity. From that university he was graduated in medicine in 1835, and was a resident physician in the Alms-house hospital of the city and county of Baltimore in that year. There was no doubt in him of what he should make of himself. He was undistracted by any pullings in a variety of professional or business directions. He meant to become a doctor. He lost no time in becoming one; but he carefully laid the foundations of classical learning before he built on them the superstructure of technical education. He believed in a high standard of preparatory study for medicine and of study in medicine. He exemplified his belief. His first hospital experience was among the indigent. All his life his talents and labors were at their service. Their gratitude shone on his path, and their homes were abodes of sorrow when he died. "The blessings of them that were ready to perish, and the praise of the poor," were and are his.

The young physician resolved to find or make, and keep, a field for himself as a general practitioner. He came to the Brooklyn of 1836 when but twenty-three years old. He died in the Brooklyn of 1887 when he was seventy-four years old. Where he first settled he ever labored until he entered into rest. In this fact a stability of character is plain. In it are revealed not only one of the secrets of "success" as the language of levity terms it, but also the qualities that won and held confidence, the qualities that formed strong and long local attachments, and the qualities that identified the life of a community with his life as that community grew from barely 30,000 to over 700,000 souls. He saw the grandchildren of his first patients through the infantile ailments out of which he had conducted their parents, after officiating at the entrance of

the latter into the world. Three generations—one his contemporary, two those whom he met at the gateway of life—grew up with him, and all of them lament his loss as that of a beloved helper and friend. Circumstances sometimes, and restlessness and the like weaknesses, too often render doctors a migratory class. The fact or habit is a regrettable one, for he who can grow with the growth and strengthen with the strength of the community, among whom he comes a youth and a stranger, until he dies a venerable and respected force, a household word that stands for honor and usefulness in that same community, gets most benefit out of life both for others and for himself, and builds unto himself a monument of character, service, and affection where it can never be belittled or obscured. This is one lesson of "staying put" which this man's life preaches from his grave as from a pulpit, on his career as a text, to those in his own or in any other calling who come after him.

The practice of Dr. McClellan in Brooklyn progressed from the small beginnings of the young physician to the utmost limits his ambition might desire, but his modesty and conscientiousness led him to circumscribe rather than enlarge such limits. His success was gradual, steady, continuous, in nothing ephemeral, meretricious, or sensational. The responsibilities of his profession were always met by him. Its honors he did not covet or seek; he even put them aside. He was chosen Professor of Botany in the College of Pharmacy in New York in 1839, being notified of the fact on June 21 of that year by "Wm. W. Milner, Secretary," under the seal of that institution. He was appointed health physician of the city of Brooklyn, May 3, 1841, to serve the term, one year, by Mayor Cyrus P. Smith, one of the most worthily honored occupants of the municipal chair. Thus before he had been five years in Brooklyn he had established a reputation with her officials, at a time when her honors were conferred by magistrates of brains and virtue only on men in their own likeness. He was subsequently chosen consulting physician of St. Peter's hospital; physician of the Brooklyn city hospital; a member of the New York State Medical Society; a member of the New York Academy of Medicine; a physician of the Mutual Aid Association of the Medical Society of the State; and a Fellow of the State Medical Association. From all of these societies but the last he resigned, as inconsistent with the ground he took on joining the latter. The like remark holds good regarding the membership which he terminated in the Kings County Medical Society. He was appointed an examining physician by the federal government, and performed his duty as such under the laws governing the enlistment of Union soldiers during the war between the states.

Other and higher distinctions were his desert, and he could easily have had them, but he preferred otherwise. His heart was in the realities of his calling.

There remain for intimation only the unreportable facts which relate to long, eminent general practice, with an entail of history in many cases and families, and the suggestion of the personality of this marked character. As a practitioner, his biography must be left to the traditions of medicine, and to the loving memories of grateful patients. To the literature of his profession I cannot learn that he ever contributed anything. He did what both hands had to do with all his might. He did not employ either hand to indite the record of his doing. This was regrettable, but it was just like him. As a practitioner he was distinguished by good judgment and fertility of resources in treatment. He was an admirable diagnostician. He kept abreast with the times by ever being a diligent student. He looked after all the details of the sick-room most carefully. In it his presence commanded confidence, and was recognised as a factor of authority. Outwardly his manner often seemed brusque, but it was the foil or shell of a nature and character which secured faith and affection. He had the implicit trust and obedience of patients. I have never met with patients so well disciplined as those who have been under his care. He was, as a man, generous, honorable, sincere, and modest. These were his conspicuous characteristics. His bearing was always quiet, and in repose even solemn, but there was a warrant in his reflected kindness which alike encouraged adults or children to question him closely, with the sure result of securing explanations that were full and perspicuous of any matters he understood. He would at such times employ either metaphor or analogy, and would gild both with a dry and lucent humor which was assisted by his unusually deliberate and slow habit of expression. Much of the brusqueness already referred to was due to extreme nearsightedness and to deafness, and was the unintentional consequence of those infirmities. To his friends his tone was sympathetic and cordial. His sense of their love gave his beautiful nature confidence in itself. He was irascible or easily irritated, but he was slow to real anger. The fountain's depths were not disturbed by the things that fretted its surface. He ever wished to account for things. He therefore thought before answering, and weighed every word in the issue of it. This was also a result of his absolute love of truth in all things. He explored science. He daily and profoundly studied and believed the Scriptures, and left, I am informed, an admirable biblical library. The reserve of the man made him few friends, but his intrinsic virtues and force made them his friends forever. He was not devoid of humor. On the contrary, either in imparting or hearing a good story he took almost the only pleasure his busy life allowed itself. His laughter was silent and inward, but its quality and its expression in outward movement rendered it contagiously irresistible.

I could exceed your space and my strength in delineating the traits of my departed friend, but what has been hastily and imperfectly jotted

down from meagre data must suffice for a tribute to a man who was strong in himself, strong in medicine, strong in his personal influence, strong in his love for humanity, and strong in his love and fear of Him whose best name and function are carried to the heart when He is called The Great Physician.

[The foregoing was almost, if not quite, the last work done by the pen of Dr. Hutchison, a memoir of whom also appears in this volume. Our Association has suffered sadly through the death of so many great and good members during the eighteen months just passed.—E. D. F.]

MEMOIR OF THOMAS F. ROCHESTER, M. D.

BY GEORGE N. BURWELL, M. D., OF ERIE COUNTY.

It is eminently fitting that our Association should notice the several solemn and sad dispensations which it has suffered since its last gathering. As a society, we are weakened by these losses of distinguished colleagues; the profession, as a whole, acknowledges their great worth and mourns them; while their respective communities have lost each its foremost citizen and principal ornament.

Of one of these, Dr. THOMAS FORTESCUE ROCHESTER, it now becomes my sad duty to speak, for seldom has death gained a richer spoil than in the extinction of the earthly existence of this admirable man. Dr. Rochester was a man of unusually fine physique, with a large, broad head, and commanding presence. In any company he would be always a man of mark, the observed of all observers.

He was born in Rochester, New York, October 8, 1823, where also his boyhood days were spent. He graduated Master of Arts in 1845 from Geneva college, Geneva, N. Y., and in 1848 took his degree of Doctor of Medicine from the University of Pennsylvania. For the year following he was one of the assistant physicians at Bellevue hospital. Then came a year abroad, during which he visited Paris, London, and other cities of Europe, for study and recreation.

Dr. Rochester returned to America in 1851, and established himself in New York city, where he continued to reside until 1853. He then came to Buffalo, to take the position vacated by his friend, Dr. Austin Flint, Sr., as Professor of the "Principles and Practice of Medicine" in the University of Buffalo; and thenceforth Buffalo became the city of his adoption and of his pride. He came here a stranger, but by his unwearied industry and native force he impressed himself at once upon the profession and the community. His rapid success was phenomenal, and his course in the profession ever onward and upward, until suddenly stricken down, in February, 1885, by what proved to be his fatal sickness.

For about thirty-two years his career was one of unsurpassed industry, prosperity, and fame. In all these years he had a practice extensive and lucrative beyond that of any other practitioner of the city. His great professional reputation extended all through western New York, and his consultation practice throughout this wealthy region was for many years large and lucrative.

His principal characteristics as a physician were the facility and correctness, as by intuition itself, of his diagnosis, the copiousness of his resources, and his great devotion to his patients. Study and practice had made the first and second of these points practicable, but goodness of heart alone made the last. He made his patients his children, as it were, and no fatigue, no sacrifice of time and repose, were too great for him to impose upon himself for their benefit. Indeed, the spontaneity and alacrity with which he often made these sacrifices implied an almost total oblivion of his own existence as an individual.

Dr. F. W. Abbott, a former student of Dr. Rochester's, states that he knew an instance when, for twenty-one successive days, Dr. Rochester visited a patient from one to four times at night. For this devotion he received his reward in a faith and confidence, gratitude and affection, which were absolute, and which must have been most grateful to him.

I have spoken of his having succeeded Dr. Flint as Professor of the Principles and Practice of Medicine in the University of Buffalo. He was then not quite thirty years of age. This position he filled for thirty-three years, and up to the time of his death, with great personal fame and consequent renown to the university.

I believe his last public duty was the concluding of his course of lectures for the winter of '86 and '87. Dr. Rochester lectured with great perspicuity and simplicity. His manner was free from affectation, or from any straining for effect, and ever and always free from any vulgarity. The subject alone, in all its bearings, occupied him. His professorship added greatly to his reputation; and it was also a great aid to him as a practitioner, for it obliged him to keep pace not only with current medical literature, but with the advances made and making in all branches of medicine.

He is said to have taught at the university, altogether, three or four thousand young men, a large proportion of them being from western New York. The yearly class of young men, made physicians under his tuition, naturally in their turn made the reputation of the medical college, and at the same time added to the fame of its professors. He made his points, and emphasised them by copious illustrations drawn from his extensive observation. His practice served him material for his lectures, and his lectures added to that renown which, in its turn, drew him practice. His clearness of conception he transferred to the student, for he made him see with his eyes and think with his mind, and even before he reached the conclusion of his subject the student foresaw just what was coming: not always appreciating the master mind that was leading him, he was made to feel that it was his own acuteness which had led him to anticipate, as it were, the master's conclusions.

Dr. Rochester was connected, as attending or consulting physician, with two hospitals in Buffalo,—the Hospital of the Sisters of Charity,

which he served for thirty years, and the Buffalo General Hospital, which he served from 1861 to the time of his death, a period of twenty-six years. He was also trustee of the latter hospital, and has constantly given his whole influence to carry it successfully through its many discouragements. Indeed, I am told that several times it would have succumbed but for his personal appeals to his wealthy friends. Most truly, then, does he deserve to be called the "Father of the Hospital;" and a noble monument it is to his memory.

Dr. Rochester held also positions which were not professional. First, President of the Board of Trustees of the Fine Arts Academy; second, President of the local board of the State Normal School; third, park commissioner. In all these positions he made himself felt by his decided opinions and wise counsel.

He was always an able and influential member of the two medical societies of this city and county,—the Buffalo City Medical Association and the Erie County Medical Society,—and served both as President.

He delighted always to meet the younger of his medical brethren, to discuss with them medical subjects; and he was considerate of them and of their opinions. Indeed, to all the young men of the profession he was at all times attentive, and strove as far as possible to be their helper.

He was in 1875 President of the New York State Medical Society. The subject of his inaugural address was "Medical Men and Medical Matters of 1776." On the division of this society on the question of the code, Dr. Rochester was one of the seceders, and thus became one of the original Founders of this Association which I have the honor of addressing.

In 1876 he was delegate to the International Medical Congress at Philadelphia. In 1879 he was chairman of the Section on Medicine at the meeting of the American Medical Association in Atlanta, Ga. The subject of his address before the section was "The Practice of Medicine, Materia Medica, and Physiology." In 1848 he was chosen a member of the New York Pathological Society.

With so many exacting interests and obligations, it is not strange he did not make larger use of his pen; yet he found more time than the great majority of us, far less engaged, to utilise his talents as a medical observer and writer. Short articles, calling attention to some peculiarity of interest in symptomatology or therapeutics, were frequent, and always valuable and suggestive. The more elaborate of these articles are,—"The Winter Climate of Malaga," "History of the Medical Societies of Buffalo," "The Army Surgeon," "The Medical Hygeia," and "Medical Men and Medical Matters of 1776."

Yet it is to be very greatly regretted that he did not find time to write out the rich results of his manifold experience with the sick. Certainly these results would have been educators of all students in medicine, and

invaluable not only to the practitioner, but to the science of medicine itself. But his time was necessary for those other duties to the sick which he had already assumed, and which could not be put aside. They were imperative; they brooked no delay; they admitted of no procrastination. He had to make a choice between the claims of his literary judgment, and the dictates of his own heart; between the ambition of authorship, and the devotion of his life to the alleviation of human suffering;—and he chose the latter, generously declining literary eminence for the sole purpose of doing good. But few are capable of adequately appreciating the magnitude of such a sacrifice. In the first instance he would have inscribed his memorial in books; he preferred rather to write it on hearts.

Dr. Rochester married, at the age of twenty-nine, Margaret Munro, daughter of the Rt. Rev. W. H. DeLancey, D. D., D. C. L., Oxon., first bishop of the diocese of western New York, a lady of high lineage and character, and always a most loving helpmate. Sons and daughters were born to them, prosperity and happiness smiled upon them, until this fatal sickness came like a thunderbolt from a clear sky. The stricken home has the affectionate sympathy of all Buffalo.

Having spoken so largely of his various public trusts, I ought at least to allude to the religious element of his character. He was a member of Trinity (Episcopal) church; and here, as in every relation, he was consecrated to duty. He was ever of the foremost in his devotion to his church and to her charities.

Dr. Rochester's death had been long anticipated. For a year and a half it had been but a question of time; the way and the manner were certain. Finally the dreaded summons came, and he died on the 24th of May, in the early morning of the most beautiful month of this year. His death was peaceful and without pain. Quickly the melancholy news, "Dr. Rochester is dead!" spread through the city, carrying sorrow and desolation everywhere; literally so, for in no part of this large city was a place that he did not have at least one devoted friend. All hearts were touched. The entire community felt that it was a public calamity. There was no one in that dread moment to speak of his virtues, no one to be eloquent in his praise, for all were dumb in the painful sense of great personal loss.

He died in the sixty-fourth year of his age, too young for a man of his talents and position, and of his great capacity for usefulness. For he not only possessed that capacity, but he had the will and disposition to use it for the best interest of general humanity.

The first impression an observer would receive on seeing Dr. Rochester would be from his fine physique, and from the expression of character so noticeable in his countenance. These, especially the latter, would demand for him consideration and respect. Next, he would discern decision

and self-reliance; for he was a man full of confidence in his own judgment, and, of course, in his own opinions. He possessed a warm and vivacious temperament. Business was his delight and action his element. He was a man of great resolution: difficulties did not dissuade him nor discouragement dishearten him. He knew always what he wanted and how to accomplish it. A man who did so much work must also be a man prompt in decision; and to resolve was with him to execute. He possessed great power of concentration, and had good sense and prudent judgment. Indeed, the main force of his mental organisation was his strong masculine understanding. An industry untiring, yet always well directed, was eminently characteristic, a part and parcel of his very nature. A motto, embroidered and framed, hung in his chamber: "What thy hand findeth to do, do it with thy might." What could be more characteristic of the man?

Dr. Rochester was a man of the highest integrity. I have never once heard any man, by word or innuendo, impugn it. "He kept his heart pure," was the happy expression of one of our oldest and most observant citizens. His generosity "went beyond prudence." He was noted for the freedom and munificence of his gifts for charity. What they were in private none ever knew. One gift came to my knowledge which was reckoned by thousands. A characteristic way with him was to divide his gift into two parts, and one, often the major part, was always given in his wife's name.

Finally, at the foundation of all his moral qualities, governing and directing the whole man, was genuine Christian piety; never loud and obtrusive, but still and unostentatious, showing itself but in action; and this, with the modesty of the hand that never lets the other know its bounty.

MEMOIR OF JARED LINSLY, M. D.

BY S. T. HUBBARD, M. D., OF NEW YORK COUNTY.

Dr. JARED LINSLY passed from earthly existence July 12, 1887, after a lingering illness, at the place of his birth, parish of Northford, town of North Branford, Conn., in the eighty-fourth year of his age.

His father, Josiah J. Linsly, and mother, Eunice Hall Linsly, were natives of the same place. The Linsly family were formerly residents of the vicinity of London. His earliest ancestor in America was John Linsly, who was a member of the colony that settled in New Haven, Conn., about 1640.

Noah Linsly, an uncle of Dr. Linsly, was graduated at Yale college in 1791; he died in the year 1814, leaving in his will a bequest to Yale college for the general purposes of the institution, which endowment was increased by Dr. Linsly, and is designated the Noah and Jared Linsly Fund. The income of this fund is now applied to the purchase of books for the Department of Modern Languages in the college library.

It is said that Dr. Linsly was a delicate boy, and not having the requisite strength to labor on his father's farm, he acquired a fondness for books, and it was decided that he should prepare for college. He was admitted to Yale college in the year 1821, but by reason of his delicate health he was not graduated until the year 1826.

Without fortune or influence, but with Christian faith and habits of industry which his parents had inculcated, and with a trained mind which his alma mater had afforded, he removed to the city of New York during the year 1827, and began the study of his profession in the office of the late Dr. John C. Cheesman, and entered the College of Physicians and Surgeons, receiving the degree of Doctor of Medicine in the year 1829.

He next served as an interne for the period of two years in the surgical department of the New York hospital, and during the cholera epidemic of 1832 he was physician to one of the cholera hospitals.

A partnership was then formed with Dr. William Minor, and subsequently, in 1834, with Dr. William Baldwin, which continued until the latter's death in 1841.

Dr. Linsly occupied the same dwelling and office in Harmon street, now East Broadway, until his removal in 1853 to his late residence in Lafayette place.

Jaud Linsly

CAL.

He was married to Catherine Fisher Baldwin in 1834. Their family consisted of nine children—five sons and four daughters. His widow, three sons, and three daughters survive him.

In the practice of his profession Dr. Linsly was diligent, faithful, and successful. He was seldom absent from the city except for occasional visits to the old homestead. During the year 1853 he and his wife were the guests of his life-long friend, the late Commodore Vanderbilt, on his steam yacht North Star, upon a trip from New York to England, Russia, and the Mediterranean.

During his life his contributions to the library of Yale college were so great that his name appears, with those of other benefactors, in marble tablets on its walls.

Dr. Linsly was proud of his ancestry, gloried in the fame of his native state, and had faith in the grand destiny of his country.

He had great sympathy for young men in their struggles for eminence, and often aided them freely from his income, and by commending them to the patronage of the multitudes of people whose acquaintance he had made, and whose confidence and good-will he had quickly won. He was social in his habits, good company, full of anecdote, poetry, and history, and a good story-teller.

He and his father (a public man) had lived through so much of our existence as a nation, that our American history, politics, and literature were as familiar to him as household tales.

At his funeral, says the "New Haven Courier," Dr. Alexander, his city pastor, spoke fittingly and eloquently of his beneficent life, and of him as a type of the many men of New England who had gained their intellectual training on its rugged soil, and then gone out into their life work to the great cities; that his life as a physician had been useful and earnest, retaining therewith a love for home, nature, and all good things, and above all for the God of his fathers. President Porter of Yale college, on the occasion, said that Dr. Linsly possessed in his character the rare combination of integrity and strength with simplicity and sweetness. This integrity and strength furnished him with success in his calling, and fitted him for the stern duties of his profession, which required honest dealing with nature and honest dealing with suffering. His integrity and honesty shone brighter in the glare of artificial city life, and the princes of capital honored him for the truth and sweetness which mingled their contrast in his character, and for it the members of his profession also honored him. He preserved with loving fondness the associations of his childhood, and the recollections of his college life with all the freshness of a boy, and as a busy man he was ever living over and rejoicing in them.

Dr. Linsly had an extensive practice among the best families of the city, and continued his labors until within two or three years of his

death, when, in consequence of several attacks of illness, he was obliged to give up a large part of his professional business. Something more than a year since he retired to his homestead at Northford, returning not again to the city. About a year since he had an attack of pneumonia, which left him very feeble. The immediate cause of his death was senile gangrene.

I am not aware that he made any printed contributions to medical literature. I remember when a student hearing him read a paper before one of the medical societies on the Treatment of Syphilis with Fumigation from the Red Sulphite of Mercury, for which he claimed great success.

His large experience made him a good diagnostician, a practitioner of excellent judgment, and a wise counsellor.

Dr. Linsly was a trustee of the College of Physicians and Surgeons, was one of the managers of the Ophthalmic and Aural Institute, was consulting physician to the New York Dispensary, and late consulting physician to the Presbyterian hospital.

Dr. Linsly was a firm friend, a man of decision of character who had the courage of his convictions, loyal to his profession, and a hater of quackery and pretension. Although lost to our sight forever, his good deeds will ever remain in our memories as a bright example of a well spent life.

Jo. C. Hutchison. M.D

MEMOIR OF THE LATE JOSEPH CHRISMAN HUTCHISON, M. D., LL. D.

BY J. D. RUSHMORE, M. D., OF KINGS COUNTY.

This Association is again called upon to chronicle the death of one of its Founders, and a former Vice-President, Dr. JOSEPH C. HUTCHISON. This event occurred on July 17, 1887, at his late residence in Brooklyn.

Dr. Hutchison was born in old Franklin, Mo., February 22, 1827, and was the son of the late Nathaniel Hutchison, M. D., a native of the city of Armagh, in the north of Ireland, and of the late Mary Chrisman, his wife, a native of Farquier county, Virginia. He was graduated from the University of the State of Missouri, at Columbia, and in 1848 received his medical diploma from the Medical Department of the University of Pennsylvania, in Philadelphia, after a partial course in Jefferson Medical College in that city.

For a few years he practised medicine in Missouri, but in 1853 removed to Brooklyn, with the interests of which, medical, sanitary, and educational, he became closely and actively identified. In 1854 he was in charge of the cholera hospital in Brooklyn, during the epidemic of that disease, and the successful treatment of cholera patients was in large part due to his faithful, skilful, and well organised efforts in the management of the disease. And in all the years of his residence in Brooklyn since that time his constant interest in the medical work of the city has been manifested in the various positions of public medical trust held by him, as attending surgeon to the Brooklyn hospital, surgeon-in-chief of the Orthopaedic Dispensary, &c.; and the numerous hospitals to which he has been attached as consulting surgeon show as well his interest in them as the confidence of their medical officers in him.

And, with all his other professional work, he found time to contribute to medical literature the results of his clinical observations, in clear, concise, and well digested articles, always of a practical character, and bearing evidence of being written from the bedside rather than from the study. One of the last papers prepared by him was on "Transfusion," read before this Association in 1884.

His membership in many societies, local, national, and international, shows the wide reach of his medical aims; and the frequency with which he was called upon to fill offices of prominence in them attests the appreciation in which he was held by their members.

He also added to his other labors that of teacher, having held the position of Lecturer on the Diseases of Women from 1854 to 1856, inclusive, in the Medical Department of the University of the city of New York, and from 1860 to 1867 that of Professor of Operative and Clinical Surgery in the L. I. College Hospital.

His talents found abundant use also in departments closely connected with medical practice. From 1873 to 1875 he was Health Officer of Brooklyn. He was also the author of a work on Physiology and Hygiene, which has been long in use in many institutions of learning throughout the country. He was the senior member of the Board of Trustees of the Adelphi Academy in Brooklyn, and gave to its administration his constant and interested counsel.

The suffering and distress that are incident to a weak and failing heart and pulmonary oedema were borne with a patience and bravery that are the outcome of a life-long self-control and a reliance on power that is more than human; but the end was quiet and painless.

Dr. Hutchison came to the practice of medicine thoroughly equipped by natural endowments and by faithful study to take the position that he filled of a representative medical man. Of exceptionally fine physique, he carried easily the burden that was placed upon him. He brought into the sick-room, with a quiet and impressive manner, the strength and encouraging support that are so welcome to the invalid, and was given in return an unquestioning confidence and prompt obedience. In the courts of law, as an expert, he had an opportunity to manifest his ability in the terse, exact, untechnical, and unbiased testimony that he always furnished, and that was always helpful to the case on trial.

Dr. Hutchison's standing in the profession and in the community in which he lived was to a large extent based on his surgical work, although the above note is sufficient to show how much more than a surgeon he was. His tastes and mental traits naturally found expression in surgical efforts. Deliberate in judgment, viewing a case in all its bearings; conservative in practice, always making his patients' interests take the first place in his thoughts; a man of few words, ready in expedients, self-contained, of steady hand and nerve,—he brought to the bedside of his patients the qualities that command confidence, and which were to an unusual degree crowned with success. These words could be spoken of our late friend and associate with his submission, if not with his approval.

This Association will long regret that a life so full of usefulness and ripe experience, and with a promise of many years of added beneficence, should have terminated so speedily.

MEMOIR OF DR. J. C. HUTCHISON.

BY ALEXANDER HUTCHINS, M. D., OF KINGS COUNTY.

Dr. HUTCHISON'S professional career was characterised by the native impulse of his manhood. It was distinctively honorable. Of course, in this he did not have a monopoly. The great undercurrent of medical life is that of honorable dealing. The selfishness and ambitions of human nature are no more wanting among medical men than in men of other stations in life; but the necessity for mutual defence in the upbuilding of a humane profession formulated itself into an ethical system which is at once a guide for the novitiate, and an expression of a genius which has made the fathers honorable for generations. This is distinctive in the profession of medicine. And the men who have been most honored and held in most esteem among their brethren are those who have risen into positions of eminence through large ability, fine culture, and skilful accomplishment, with this high sense of honor manifest through their whole career. All who knew Dr. Hutchison will willingly accord this meed of praise to his memory. Distinguished among his fellows by rare professional skill, ambitious for recognition among his brethren, covetous of the esteem of men, not unmindful of the value of prominent position, no man can say of him that in his advancement he was indifferent to honor, or that in his acquisitions he ever gave offence. It is a true record, and a crown to be craved.

He won his way by faithfulness. He was by no means indifferent to appearances, but his honesty was too downright to permit him to pose for effect. His handsome physique and a strong aesthetic sense were associated with a native reserve of manner and a solid culture to a degree that did not permit of vanity or trifling. He had few intimates: to them he gave his utmost confidences. To all he was frank. With no taste for polemics, he simply turned aside from heartless or selfish opposition. He had risen to eminence by sheer assiduity in his chosen path, and those who saw most of his achievements knew that he never slighted the work in hand. He had confidence in his own powers because of a wide experience. It was this confidence, rather than mere professional enthusiasm, that inspired his willingness to be of help always. He had the ability to serve, and this was the incentive to his ever-readiness to serve. He was a faithful man, as he was an honorable man.

It is not in the spirit of adverse criticism, but as a comment on the

temper of the time, to assert that Dr. Hutchison belonged to a class of medical men rapidly diminishing in numbers, and apparently soon to be unknown. Preëminently a surgeon and well panoplied, no one thought of him as a specialist, for the excellent reason that he was not educated as a specialist, as are many of the younger men, and he resisted the drift into specialism which had differentiated the lives of most of his contemporaries. It is capable of proof that he successfully performed all the various operations which provide the dividing and diverging lines of the several surgical specialties. He took no measures to parade special qualifications, and so to attract popular attention to these special qualifications. He believed that the relation of specialism to scientific advance had its questionable side, and that the trade element was prominently to the front in all the specialties. This is no place to discuss this question, or to preach a crusade; but Dr. Hutchison's modest and successful career as a generally qualified surgeon and as a general practitioner is full of suggestion to those who have at heart the broadest culture among medical men, and who may have influence in directing the tendency of the younger men. It will hardly be denied that the family doctor is not the supreme authority of former days, and that the trade instinct has pandered to the unthinking popular confidence in special learning, and that the younger men are neglecting the broad foundations in their haste to raise the superstructure, and that all this must tend more and more to the creation of disease and the morbid search for special relief. Dr. Hutchison's career is a beacon on the other shore.

TRIBUTE TO THE MEMORY OF DR. HUTCHISON.

BY T. M. ROCHESTER, M. D., OF KINGS COUNTY.

In the death of Dr. JOSEPH C. HUTCHISON the profession of Brooklyn sustained a loss which to a certain extent is irreparable. Men die and their places are filled, and after a little it seems as though they had never been. But in this particular case I do not believe that it will be so.

Coming to the city at its transition period from a small to a great one, Dr. Hutchison almost at once took the position which his great talents most eminently fitted him to occupy, and for many years and up to the very day of his death he was admittedly the first surgeon of Brooklyn. So universally was this acknowledged, that he had no peers in this particular branch of the profession, but stood like a king, *facile princeps*.

Of a magnificent physique and noble countenance, he was always a marked figure in every assembly. He was one of the manliest looking men I ever knew. Saying but little, and not over ready to proffer his opinions, when he did speak it was the thoughtful expression of well considered facts. Naturally of a very reserved disposition, those who did not know him were inclined to think him cold and unsympathetic; but a friendship of nearly ten years enables me to know that this was only apparent, not real.

Of most rigid uprightness of purpose himself, he could scarcely understand the weaknesses of lesser men. What he believed to be right, that he did, at no matter what cost of personal popularity or benefit. To this trait in his character is due the position he took on the Code question; and to him as much as to any other one man do we owe the gallantry of the fight that was made, and the formation of our national code association. And we who are left should see to it that there should be no slackening in the work which he so materially assisted to originate. Strong in everything that he did, it was but natural that there should be those who did not like him, but even these could not but admire his absolute honesty of purpose. And if he did not always have the love, he certainly had the respect, of every one with whom he came in contact.

After a long and painful illness, which he bore with the exemplary patience and Christian fortitude characteristic of the man, he finally passed peacefully away, amid the universal sorrow and regret of his professional brethren. In his death the writer has had a personal grief, and it is with feelings of deep sadness that these few poor lines have been written in memory of a friend who has gone.

In Memoriam.

ALONZO CLARK, M. D., LL. D.

OBIT., SEPTEMBER 18, 1887.

In behalf of the New York State Medical Association, the Council desires to place on permanent record its deep sense of the loss sustained by the profession and the community in the death of ALONZO CLARK, M. D., whose eminence as a teacher and physician, whose uprightness of private character, and whose benefactions to his fellow-men have rendered lustrous a long and honorable career.

Approved by the Council.

E. D. FERGUSON,
Secretary.

MEMOIR OF ALONZO CLARK, M. D., LL. D.

BY ELLSWORTH ELIOT, M. D., OF NEW YORK COUNTY.

As a student in the College of Physicians and Surgeons, where Dr. ALONZO CLARK was a professor; as a member of the house-staff in Bellevue hospital, where he was one of the visiting physicians; as an associate in the Board of Trustees in the college of which he became the President; at the bedside many times where he was the consulting physician,—it fell happily to my lot to see much of him. Yet the intimate and confidential intercourse requisite for a full and accurate portrayal of his character I had not, even if I had the ability to make a fitting record of its worth. For this reason my imperfections in doing justice to his memory must be excused, while I gladly contribute my mite as a memorial of one whom most of us regarded as the foremost physician of our chief city and state.

Dr. Clark traced his genealogy back to an early settler of Plymouth, Mass. In the town of Chester, Hampshire county, of that state, a village founded by his father, Spencer Clark, he was born March 1, 1807. There the father, an energetic and highly respected man, manufactured leather, and with an associate manufacturer controlled at that time the leather market of New York city. The son acquired his early education at the village school in Worthington, at the Hopkins academy at Hadley, and under Parson Hallock of Plainfield, all of them towns in his native state. An attack of typhoid fever compelled him to postpone entering Williams college, Massachusetts, one year. He received the Bachelor's degree in 1828 from this college.

During his Sophomore year his father retired from business, being unable to compete with the tanners in Greene county of this state, their bark being better and their locality nearer the market. He offered the college boy $1,000, which he had saved for this purpose, so that his education might be completed. The spirit of the noble boy prompted him to decline the offer, and thereafter he almost entirely provided for himself. Before his graduation he was a teacher for six months in a select school at Northampton, Mass. As a teacher in this place and at Williamstown, Mass., he spent about three years, and then went to New York city with the intention of preparing himself for a Professorship of Chemistry. His name first appears in the catalogue of the College of Physicians and Surgeons in 1831–'32, as a student of John Torrey, M. D., Professor of

Chemistry, in whose laboratory he pursued his studies, and by whose advice he entered his name as a pupil of Dr. John Augustine Smith—not with the expectation of becoming a physician. After two courses of instruction, meanwhile supporting himself by teaching, he became a candidate for the Professorship of Chemistry in Williams college, but another was appointed. This misfortune, as it then must have appeared to him, was a blessing to mankind, for he then decided to become a teacher and practitioner of medicine. He could thereby find ample scope for scientific investigation, and the calling of a physician was not distasteful to him. In 1835 he received the degree of Doctor of Medicine from the College of Physicians and Surgeons. Drs. Abraham Dubois, Samuel T. Hubbard, and Prof. Benjamin W. McCready are among his surviving classmates.

Before his graduation he entered the New York hospital as Junior Walker, and having completed his course in that institution, went in 1836 to Europe, accompanying Joseph Bonaparte. Having spent some time in London and Paris in professional study, giving special attention to Pathology, he returned to his country in 1837. Twice subsequently, and prior to 1840, he crossed the ocean for professional and general improvement. The year last mentioned finds him in New York, in an apartment in the University building, not seeking practice, but working with the microscope, then rarely used by our physicians for professional purposes, and prosecuting his pathological studies in the New York and Bellevue hospitals.

In 1840 he lectured upon Chemistry at the Medical school at Woodstock, Vt., and then his career as a teacher of Chemistry was ended. Henceforth Pathology was his pursuit, and in that institution he lectured for thirteen years upon this subject, and at another season of the year in the Medical school at Pittsfield, Mass. Probably his was the first Professorship of Pathology established in this country as a distinct branch.

His connection with the College of Physicians and Surgeons as a teacher began in 1847, when he was appointed Lecturer on Physiology and Pathology. From 1855 to 1882 he was Professor of Pathology and Practical Medicine. From 1875 to 1884 he was President of the college. His resignation of this position was accepted by the trustees with much reluctance. When urged to withhold it, he quietly but firmly declined, evidently knowing that the infirmities of old age, and the progress of a mortal disease, which had then revealed its early manifestations, would soon incapacitate him for active duty. No one in our day has served the college with greater acceptance, or done more to advance its scientific standard.

He was appointed one of the visiting physicians to Bellevue hospital in 1847, and so continued until within a few years of his death, when he was made consulting physician. In 1861 he succeeded Dr. John W.

Francis as President of the Medical Board. St. Luke's, St. Mary's, Roosevelt, and other hospitals and dispensaries enrolled his name among their consulting physicians.

The Medical Society of the State of New York elected him as its President in 1853. As a rule, Dr. Clark declined all positions of honor in our medical societies, having a dread, almost morbid, of holding conspicuous positions.

As a teacher his merits have already been incidentally mentioned. With a scrap of paper containing a few notes or statistics, but generally without any manuscript, he stood before the class and taught as few have or can. His commanding and graceful presence, his pleasant manners, his mastery of the English language, his distinct and elegant enunciation, the knowledge of his subject, apparently inexhaustible, and his scholarly methods, commanded instant and persistent attention. Once when he saw a student in a distant part of the room reading a newspaper, he hinted that he did not like it; and this was the only instance of inattention noticed during the two courses of his lectures which I attended. Always avoiding everything that was sensational, in the most unassuming manner he conveyed to the minds of his hearers what he thought they should know, and thousands are ready to testify to his unsurpassed success. At the period which I have in mind, it was generally understood that he neither had nor wanted private practice. His whole time was devoted to his studies, his service in Bellevue hospital as visiting physician, and to his lectures. It was evident that he enjoyed talking to medical students as his chief delight, and their enjoyment in hearing him made his lecture-room more attractive than that of any other professor.

The years spent in the wards and dead-house of Bellevue hospital gave him a power of diagnosis and a knowledge of morbid processes unequalled by that of any of his contemporaries. His opinion gradually came to be valued by the physicians of the city and the country; and the result was, that without any private or family practice excepting for those who came to his office, he usually had as many consultations as his time and strength and the duties of his professorship would permit. By none was he outranked. And this eminence was not obtained by sham or display, nor by the influence of social or religious organisations, nor through wealthy and powerful friends and relatives. Dr. Clark was plain and simple in all his ways: walked about the city or rode in its public conveyances like a man in humble circumstances, but impressed all who saw him with a sense of power and goodness. His professional brethren knew that he understood disease, and that, with him to help them, they would receive the utmost possible aid in the management of their difficult cases.

Auscultatory percussion, his management of typhus fever, and his treatment of peritonitis by opium may be mentioned as his valuable contributions to the healing art. In regard to the first, we have his printed

account, as follows: "In the year 1840, probably in January, the late Dr. Camman called upon me with a new idea. It was no more than a thought. He had not attempted to prove or to apply it. May not vibrations be produced in solid or thick walled organs which can be brought to the ear as sound? He had no sooner stated his point than I saw, or thought I saw, a new field of useful investigation. We agreed at once to give our leisure time to the inquiry. We met day after day at the dead-house of Bellevue hospital, where I was already an accepted volunteer, and with stethoscopes of solid cedar wood, one inch in diameter and six inches long, wedge-shaped, or almost pointed at the objective extremity, each furnished with an ivory ear-rest, through which the cedar projected slightly, we began and prosecuted the study. Dr. C. T. Mitchell, then of New York, now of Brooklyn, often met with us and gave us his assistance. The mode of proceeding was this: The objective end of the stethoscope was in central position, over the heart, for example, or over the spot where the lung does not overlap it, and the ear was applied to the aural end, leaving the two hands free. The forefinger of the left hand was the pleximeter, and the first two of the right hand the hammer. By standing on the right side of the body, and then on the left, we could easily percuss in the whole circumference of the heart. We percussed first off the heart, and made the percussion approach it in a right line on every side in succession. While the percussion had not reached the organ, the sound was distant and of small volume; but when it reached the outer border of it, on either hand, the sound grew instantly louder and acquired a half metallic ring. This point was accurately marked. In this way the whole circumference was mapped out, and then sharpened knitting needles were driven into the chest at these marked spots, perpendicular to the plane of the body. We were surprised at the accuracy of our measurements. The needles were always in contact with the pericardium, often entering it without wounding the heart. These experiments were repeated day after day by ourselves and by friends, and always with the same results. Upon the dead body, then, the demonstration was complete."[1] The same method was applied in examining the other internal organs, with the same success. The professor, in the continuation of his account, gives instances of the wonderful success of his method in diagnosticating rare cases of disease.

It is interesting to read how he managed typhus fever in Bellevue hospital. There were 250 cases constantly under his care, and as many more under the care of his colleagues. The mortality was great. Precautions against draughts of air, from fear of pneumonia, were carefully adopted. Dr. Clark, not having this dread, ordered that there should be the freest ventilation, with scrupulous cleanliness. Although it was winter, the windows were removed, stoves were placed before the open

[1] See his "Lectures on Diseases of the Heart," N. Y., 1884, pp. 38-39.

spaces to raise the temperature of the incoming air, clothing was increased, stimulants were given in moderate quantities, and other medicine mostly dispensed with. Of the 250 cases, not a death occurred in a period of a fortnight. In two weeks they were convalescent. In other wards of the hospital, where the management was unchanged, the mortality was undiminished.

The treatment of peritonitis, by free venesection, leeches to the abdomen, and the external and internal use of mercurials, which was in vogue when he entered the profession, was through his efforts completely revolutionised. After several years of study and observation, he came to the conclusion "that a kind of saturation of the system with opium would be inconsistent with the progress of the inflammation, and would subdue it." It is not necessary to dwell upon this subject any farther, for a full account of Dr. Clark's opinions and practice in this disease may be found in his article on Peritonitis in Pepper's "System of Practical Medicine by American Authors," vol. ii, pp. 1132–1181.

A list of Dr. Clark's other publications is given in an appendix to this paper.

Dr. Clark possessed a vigorous constitution, which seemed to resist fatigue. Through his prolonged life he most industriously attended to the duties of his profession, without taking many holidays. A few years ago he purchased a beautiful place in Darien, Conn., and there through the hot season he would go for a few days, or for two or three days of each week. The disease which finally terminated his life dated back several years. It was attributed to a degeneration of the cerebral circulatory system, giving rise to apoplectiform symptoms, and producing much impairment of mind and body. He did not leave his house for six months prior to his death. Three or four days before his departure he had convulsions of his right side. Gradually he became comatose, and death came.

I cannot forbear making a statement in regard to the unswerving firmness with which he upheld the honor and dignity of the medical profession. We never saw his name and titles appended to the recommendation of some wine, contrivance, or proprietary article, as some high in popular estimation are wont to permit. He believed that what was valuable needed no such indorsement.

One of the last medical meetings, if not the last, attended by Dr. Clark was at the New York Academy of Medicine, at the beginning of the attempt to change the Code of Ethics of the American Medical Association, adopted by the Academy, which was, alas! finally accomplished, and which resulted in the resignation of our famous associate, the late Dr. Flint, and other Fellows. Here Dr. Clark came, feeble in body but firm in mind, and by his emphatic No protested against the action of the revolutionists.

Dr. Clark closes his address before the Medical Society of the State of New York in 1853 with the following words: "Medicine demands of us that we be men of integrity and honor, men of character, that she may be respected in us; men of charity, that she may be loved; men of learning, that she may exercise her rightful authority; men of research and labor, that she may claim from each something to be added to the general stock of knowledge. Let us remember that our corporate character is the aggregate of our individual characters; that improvement must be personal; and let our maxim be, 'Seek *truth*, and pursue it.'" How truly his life conformed to this high standard those who knew him best will give the strongest affirmative testimony.

APPENDIX.

I add an incomplete list of his works, found mostly in medical journals and in the Transactions of medical societies, with the dates of their publication.

1835. Graduation Thesis, "Abstinence from Food and Drink."

1840. Joint paper on "A New Mode of Ascertaining the Dimensions, Form, and Condition of Internal Organs by Percussion," by G. P. Camman, M. D., and A. Clark, M. D.

1853. Address as President of the State Medical Society "On the Claims of the Medical Profession."

1855. "On the Treatment of Puerperal Peritonitis by Large Doses of Opium."

1857. Remarks on Puerperal Fever.

1861. Paper on Supposed Case of Murder.

1861. Lectures on Diphtheria.

1866–'67. Lectures on Cholera.

1870. Lectures on Relapsing Fever.

1876. Paper on Salicylate of Soda in Rheumatism.

1878. Lectures on Typhoid Fever.

1878. Clinical Lecture on Localised Peritonitis.

1880. Lectures on Eruptive Fevers.

1884. Lectures on Diseases of the Heart, a small octavo of 251 pages, published by Bermingham & Co., N. Y.

1885. The Article on Peritonitis, in Pepper's "System of Practical Medicine by American Authors," vol. 2, pp. 1132–1181.

The published Transactions of the N. Y. Pathological Society abound in the reports of cases which he presented, and in remarks upon specimens presented by other members.

In addition to the foregoing, he edited an edition of Dr. Elisha Bartlett's book on the Fevers of the United States.

MEMOIR OF DR. ALONZO CLARK.

BY JOHN SHRADY, M. D., OF NEW YORK COUNTY.

My first acquaintance with Dr. ALONZO CLARK began late in the fifties, just a few years after the death of Bartlett, when he himself had about turned his fiftieth year. Even then he was called by the endearing title of Old, without the taint of irreverence, but by way of patent right to the past, with all its racy flavors. He was then some years past, as the poet puts it, the

"Quiet half-way hostelrie on life's long road."

I met him, as he always should have been first met, in the lecture-room. I was impressed by his unique personality, his winsome diction—recalling the bald simplicity of Swift, and the clean-cut, unadjectived Saxon of Thackeray, which, like the wand of Mercury, leaped, danced, and somersaulted in advance of the gods. I well remember him in that long ago, just fresh from the cross-examination in the Parish will case, before Medical Jurisprudence had assumed its subtleties, wearing his laurels with an unconscious grace. He stood before the class in the pose of Sir Astley Cooper in the familiar office print, with his right hand extending down to the table. Upon the smallest finger of that hand there gleamed a diamond, which class-room tradition had mellowed with some romance of the heart, just such a one as that with which the world explains away all bachelorhood. If true in our professor's case, Hymen lost a votary, but Science had gained a high priest. His figure was tall, striking, well rounded, and clad in the conventional black of the profession. A Graeco-American face, surmounted with straggling, somewhat unruly locks of iron-gray hair, crowned the superb physique; and this must complete our attempted pen-picture of his personal appearance.

He then appeared to me, and indeed ever afterwards, not great, "figuring as such in his own and other minds," not grandiloquent, not exalting his function, not anxious for cheap effects, not making broad the phylacteries, but loyal to the truth, striving after far-reaching results, and as careful not to mislead as the guide in the murky night. He would give a word or a line, pregnant with meaning, in the low monotone of the skilled elocutionist, and the self-poise of a Wendell Phillips before a hostile audience. In very truth, he seemed—not alone to me, but to all—the Apostle of Medicine, with a character far above his reputation, a

man of the broadest culture and the most quiet philosophy. We all remember his sallies at the glare of surgery, and his expressed preferences for the triumphs of her milder, more unobtrusive, sister. Still more interesting to most of us were the quiet little comedies, in which the coming graduate, never sure of any attainment, plied the grim, somewhat frigid, tutor with transparent questions for the sake of a safe passage through the green-room.

To us who sat at his feet, there seemed, despite the subdued manner, the suggestion of a force, just short of its manifestation. There also came withal the suspicion of a dainty egotism,—not so much in words, for our professor dealt in little "I's,"—but yet it was never entirely absent, although it required to be uncovered just after the least whit of delving. He taught "line upon line and precept upon precept," with the emphasis of repetitions, not of words but of ideas, always cautioning his class against wild expectations, and summing up with the axiom that there was a limit to our art.

Among his fellow-teachers were Willard Parker, with his lithe, erect, symmetrical figure and strikingly handsome face, whose skill in similes, emphasised by a high tenor voice, captured the first course student, not, however, without the doubt of a lurking fallacy; whose wit, as compared with Clark's, was as the popping of the cork to the bubbling of the wine—a kind of Henry Clay of the hustings; bright, self-confident, and withal somewhat superficial, but never uninteresting;—Joseph M. Smith, erudite, precise, urbane, and often prosy;—Chandler R. Gilman, an admirer of Ogden Hoffman and Rufus Choate, conservative almost to the verge of cowardice, a veritable disciple of Momus, who sometimes to his biting satire added the arts of the Merry Andrew; an equal match in repartee to Parker, who, he said, learned by absorption, and his superior in classic English lore;—Robert Watts, of genial memory, the glib anatomist, whom no stenographer could follow, the master of condensed statement, and the Douglas Jerrold among physicians; exact in knowledge, keen in judgment, and the welcome addition to every circle;—Samuel St. John, quiet, well versed in his art, but an expounder of a science (chemistry) not regarded as essential for the procurement of the coveted degree;—and last, not least, John C. Dalton, who began a new era with a marvellous crayon, and whom, still living, it would be indelicate to praise.

Among all these Alonzo Clark held his own, a peer, a sort of all-around man, with perhaps larger classes, augmented by many medical celebrities, who sauntered in to burnish up their own knowledge, or to enjoy his exquisite periods. To many of these last he was bound by ties of closest friendship, as an exemplar of the sturdy fighter whose perseverance in his earlier career as lecturer had won a victory from despair; whose fame, growing by very slow accretions,—"brick by brick," as he

himself said of all knowledge,—was gained without guile. Of him it may be said, that with Sydney Smith he believed that "the only method of preserving the bulk and value of the pile was by constantly adding to it."

Well do I remember the grand Alonzo's extreme simplicity and candor. Once I caught him apologising to a patient for having used, instead of a street car, a carriage, all on account of a catarrhal fever. A vehicle, indeed, seemed his aversion,—the end corner of the street car aforesaid, and a medical pamphlet, being luxuries enough for him, in the enjoyment of which no one disturbed him, through fear, perhaps, of exciting the gentle savagery of his nature. A mutual friend related to me an anecdote of his having acted as the substitute of a brother physician who required a fortnight's vacation, and who had insisted upon the use of his own equipage during his absence. On his return, Clark chuckled out his satisfaction with the remark, "How glad I am to be once more upon my feet!" His wit, indeed, had just the faintest tint of satire. I can recall an instance of a hubbub in a Bellevue ward, just as he had turned his back upon a bed or two. He retraced his steps to investigate the cause, and announced to the crowd of students that it was "a case of professional pride—two coachmen quarrelling over their ability to drive." Then, too, who does not remember his gentle raillery at the expense of the clergyman sent to Europe by his congregation to improve his voice, and who reimbursed them with much improved sermons! Who cannot recall the merry twinkle of the eye as he would gravely tell the class that he well knew that many or all of them would be subjects of unjust censure and of—unjust praise,—so that, after all, the ledger might be said to be pretty evenly balanced! And who, again, cannot conjure up from the misty past the quaint thrusts at Parker's Beecherisms, and at his "reasons from analogy," at that erratic brother's off-hand explanation of the whole matter of inflammation—which he in *sotto voce* reminded the class ought to be invariably spelt with one *m*—wherein he urged that the phenomenon was only a brisk fight between carbon and oxygen! Let us pass in review some of his apothegms, such as "You may know the intractability of a disease by its long list of remedies," "Symptoms which cannot be readily marshalled into line must be credited to the nerves," "The medical errors of one century constitute the popular faith of the next," "Every man's disease is his personal property," "There is no courtesy in science."

Alonzo Clark never wrote much,—not that he was indifferent to the expectations of his admirers, but because he was crowded with consultations and hospital work, aye, most of all, on account of his fastidious taste in the use of words, and, to express it in artist phrase, because his conception was beyond the execution. He would revise *ad infinitum*, to the horror of proof-readers, and against the fears of bankruptcy on

the part of publishers. Probably, like Moore, the poet, he would wait months for a single word. Precision was indeed his bane and his antidote. His New England birth may have fostered this exactitude of method, which, as in the case of Flint, had not the broadening benefit of Western contact. There appeared to be too much discipline and too little dash: the army was well appointed, but it scarcely ever moved. Less skilful generals snatched away the victory justly his own.

Thus, within the space of two years, has the profession sustained the loss of two of its more prominent leaders,—Flint and Clark,—the one the sturdy Roman, the other the cultured Greek;—the one comparable to a picture, here and there perhaps in need of a touch, but gorgeous with autumnal tints; the other the chaste, finished statue, without a trace of the chisel's dust;—the one winning by his versatility, the other followed because of his individuality;—both iconoclasts, the one destroying by trenchant blows, quick and sure of aim; the other occasionally lingering to study the symbolism of the creation;—both Platos, the one walking with his pupils, the other teaching from an eminence;—both priests in the temple of medicine, both immolators upon its altars, and both entitled to utter the cry of "*Procul este profani;*"—both workers through life, for both had known, with Emerson, that "God offers to every mind its choice between Truth and Repose. Take which you please; you can never have both."

Clark has gone to join the great majority, leaving the greatest of legacies, the memory of his tender graces. Fain would we all have added a leaf to the chaplet, merely as a personal tribute; but his fame, grown sturdy with the years, needs it not. From his modest, weather-beaten sign, with its simple lettering, "Dr. A. Clark," down to the sombre casket, with its crossed palms, bound with the funereal yet royal purple, he was the same grand man, hardly in need of the plaudits of posterity, for his works do follow him. Happy indeed would any of us be could we but die with his record in that profession to which "many are called but few chosen," with no Mordecai at our gate. May not some of us deserve so well as he Johnson's epitaph upon Goldsmith,—

"*Nihil tetigit quod non ornavit*"?

RECOLLECTIONS OF DR. ALONZO CLARK.

BY J. W. S. GOULEY, M. D., OF NEW YORK COUNTY.

My acquaintance with our late honored Fellow, Dr. Alonzo Clark, dates from the time of my pupilage at the College of Physicians and Surgeons, when that renowned institution of learning occupied modest quarters in Crosby street. Dr. Clark then filled the chair of Physiology and Pathology. In those days the pupils came more frequently in social contact with the professors than at present. The school was smaller, the city was smaller, than now. Having thus had an early opportunity to observe the personal characteristics of this most admirable teacher, I shall say a few words about him as a man, as a teacher, and as a physician.

Dr. Clark endeared himself to those who knew him by his unostentatious charities. He did good, as it were, by stealth. Naturally modest and retiring, he appeared cold and reserved to strangers, but his heart was of the warmest. Of cheerful disposition, his greatest happiness was to contribute to that of others, and this was constantly manifested in kind words and deeds.

As a teacher, Dr. Clark was the peer of his colleagues, and commanded respect by his general scholarship and by his medical erudition, as well as by his noble and dignified bearing. Deliberate in his utterances, careful in the use of words, precise in the description of diseases, accurate in diagnosis, wise in prognosis, thoroughly conversant with the subjects of his discourses, he left the impress of his methods upon his many disciples. There were but few students in my time who were not in possession of full notes of Dr. Clark's lectures on pathology and the practice of medicine.

As a practising physician, I met him when I became an interne in his service at Bellevue hospital, in the year 1853. There I fully realised the excellence of his teachings; there he was able to illustrate so brilliantly those subjects of which he had before been able to treat only theoretically; and there he acquired and earned, by diligent labor, his high reputation as a clinician. He brought into private practice and made the best use of these methods of precision which he had employed as a teacher, soon became the archiater of New York, and was esteemed as much for his gentle qualities as for his professional ability. His extreme modesty prevented him from bequeathing to the profession a great treatise on

medicine, which was looked for by all those who knew of his vast experience and acumen. His contributions to science consist mainly of essays, published lectures, and discussions on various topics in associations of physicians.

He served with great fidelity for more than thirty years as attending physician in Bellevue hospital, and retired but a few years ago on account of the sickness which ended the days he had spent to such noble purposes.

It has been our sad duty to mourn the loss of many eminent Fellows of this Association. This year, already, death has stricken several of our associates, among whom may be mentioned our dearly beloved Hutchison, Brooklyn's most eminent surgeon, and that grand old soldier in surgery, Dr. Hyde, who began his career before most of us were born, and who died in harness in the full possession of his faculties. His life was not lived in vain. His labors were vast: may his reward be great!

LIST OF FELLOWS,

BY DISTRICT AND COUNTY.

FIRST OR NORTHERN DISTRICT.

FRANKLIN COUNTY.

Founder.	Gillis, William.	Fort Covington.

1

FULTON COUNTY.

Original.	Blake, Clarence R.	Northville.
Founder.	de Zouche, Isaac.	Gloversville.
	Edwards, John.	Gloversville.

3

HAMILTON COUNTY.

	McGann, Thomas.	Wells.

1

HERKIMER COUNTY.

	Casey, J. E.	Mohawk.
	Douglass, A. J.	Ilion.
	Ellis, J. B.	Little Falls.
	Fox, Eli.	Mohawk.
	Garlock, William D.	Little Falls.
Original.	Glidden, Charles H.	Little Falls.
	Green, H. H.	Paine's Hollow.
Original.	Potter, Vaughn C.	Starkville.
Original.	Sharer, John P.	Little Falls.
Original.	Southworth, Mark A.	Little Falls.
Original.	Young, John D.	Starkville.

11

JEFFERSON COUNTY.

Founder.	Abell, Ira H.	Antwerp.
Founder.	Crawe, J. Mortimer.	Watertown.
Founder.	Johnson, Charles M.	Watertown.
Original.	Johnson, Parley H.	Adams.
	Miller, J. H.	Carthage.

5

LEWIS COUNTY.

	Crosby, Alexander H.	Lowville.
	Douglass, Charles E.	Constableville.
	Joslin, Albert A.	Greig.
	Kilborn, Henry F.	Croghan.

4

MONTGOMERY COUNTY.

Original.	Ayres, Douglas.	Fort Plain.
Original.	Biggam, William H., Jr.	Fort Plain.
	French, S. H.	Amsterdam.
Original.	Graves, Ezra.	Amsterdam.
Original.	Johnson, Richard G.	Amsterdam.
	Klock, Charles M.	St. Johnsville.
Original.	Leach, H. M.	Glen.
	Parr, John.	Buel.
	Parsons, W. W. D.	Fultonville.
Founder.	Robb, William H.	Amsterdam.
Original.	Rulison, Elbert T.	Amsterdam.
	Simmons, Frank E.	Canajoharie.
	Smeallie, James A.	Canajoharie.
	Smyth, Arthur V. H.	Minaville.

14

ONEIDA COUNTY.

	Armstrong, James A.	Clinton.
Original.	Backus, Ogden.	Utica.
Original.	Bagg, Moses M.	Utica.
	Baker, Smith.	Whitesborough.
	Barnum, D. Albert.	Cassville.
Original.	Blumer, G. Alder.	Utica.
	Bond, George F. M.	Utica.
Original.	Booth, Wilbur H.	Utica.
Original.	Brush, Edward N.	Utica.
	Churchill, Alonzo.	Utica.

Clarke, Wallace. Utica.
Crim, Frank D. Utica.
Dodge, Amos P. Oneida Castle.
Douglass, James W. Booneville.
English, G. P. Booneville.
Flandrau, Thomas M. Rome.
Fraser, Jefferson C. Ava.
Fuller, Earl D. Utica.
Gibson, William M. Utica.
Glass, James H. Utica.
Gray, John P. Utica.
Holden, Arthur L. Utica.
Hughes, Henry R. Clinton.
Original. Hunt, James G. Utica.
Kelley, John Devin. Utica.
Kuhn, William. Rome.
Munger, Charles. Knoxboro.
Nelson, William H. Taberg.
Palmer, Henry C. Utica.
Palmer, Walter B. Utica.
Original. Pilgrim, Charles W. Utica.
Founder. Porter, Harry N. N. Y. Mills.
Quin, Hamilton S. Utica.
Reid, Christopher C. Rome.
Roberts, John L. D. N. Y. Mills.
Russell, Charles P. Utica.
Spicer, Walter E. Holland Patent.
Sutton, H. C. Rome.
Sutton, Richard E. Rome.
Swartwout, Leander. Prospect.
Tefft, Charles B. Utica.
Wagner, Charles Gray. Utica.
West, Joseph E. Utica.
West, M. Calvin. Rome.

44

OSWEGO COUNTY.

Bacon, Charles G. Fulton.
Bates, Nelson W. Central Square.
Cooley, R. N. Hannibal Centre.
Original. De Witt, Byron. Oswego.
Dowd, Pascal M. Oswego.
Drake, D. Delos. Central Square.
Original. Hall, William A. Fulton.

84

Huntington, John W. Mexico.
Johnson, George P. Mexico.
Nelson, George W. Orwell.
Todd, John B. Parish.
Original. Tully, A. Melville. Oswego.
12

ST. LAWRENCE COUNTY.

Cook, Guy Reuben. Louisville.
1

SECOND OR EASTERN DISTRICT.

ALBANY COUNTY.

Founder. Bailey, Theodore P. Albany.
Original. Houston, David W. Cohoes.
Original. Lyon, George E. West Troy.
Marsh, James P. Green Island.
Founder. Peters, Samuel. Cohoes.
Founder. Sabin, Robert H. West Troy.
Founder. Sabin, William B. West Troy.
Original. Van Vranken, Adam T. West Troy.
8

CLINTON COUNTY.

Founder. Dodge, Lyndhurst C. Rouse's Point.
Original. Howe, Edwin S. Saranac.
Founder. Lyon, E. M. Plattsburgh.
3

COLUMBIA COUNTY.

Original. Bates, Xyris T. New Lebanon.
Original. Benham, John C. Hudson.
Original. Lockwood, J. W. Philmont.
Original. Smith, H. Lyle. Hudson.
Founder. Wilson, Thomas. Claverack.
5

ESSEX COUNTY.

Founder. Barton, Lyman. Willsborough.
Church, Charles A. Bloomingdale.

Original. D'Avignon, Francis J. Au Sable Forks.
Founder. Edgerly, Edward F. Moriah Centre.
Original. La Bell, Martin J. Lewis.
Original. Pollard, Abiather. Westport.
Original. Rand, Hannibal W. Keene.
Original. Rice, Isaac. Bloomingdale.
Original. Riley, Andrew W. Au Sable Forks.
Original. Robinson, Ezra A. Jay.
Founder. Sawyer, Conant. Au Sable Forks.
Original. Turner, Melvin H. Hammondsville.

12

GREENE COUNTY.

Original. Conkling, George. Durham.
Getty, A. H. Athens.
Original. Selden, O. G. Catskill.
Original. Selden, Robert. Catskill.

4

RENSSELAER COUNTY.

Original. Allen, Amos. Grafton Centre.
Founder. Allen, Charles S. Greenbush.
Allen, William L. Greenbush.
Original. Baynes, William T. Troy.
Founder. Bonesteel, William N. Troy.
Original. Bòntecou, Reed B. Troy.
Original. Bucklin, Daniel D. Lansingburgh.
Founder. Burbeck, Charles H. Troy.
Founder. Burton, Matthew H. Troy.
Case, M. W. Troy.
Original. Cooper, William C. Troy.
Founder. Cooper, William S. Troy.
Original. Crombie, Walter C. Schaghticoke.
Founder. Ferguson, Everard D. Troy.
Founder. Finder, William. Troy.
Founder. Hannan, James C. Hoosick Falls.
Founder. Harvie, J. B. Troy.
Original. Heimstreet, Thomas B. Troy.
Keith, Halbert Lyon. West Sand Lake.
Original. Lester, Sullivan W. Troy.
Original. McTammany, William F. Troy.
Original. Magee, Daniel. Troy.
Founder. Mitchell, Howard E. Troy.
Founder. Nichols, Calvin E. Troy.

Founder.	Nichols, William H.	West Sand Lake.
Original.	Rogers, S. Frank.	Troy.
Founder.	Roseau, Zotique.	Troy.
Founder.	Seymour, W. Wotkyns.	Troy.
Original.	Skinner, Smith A.	Hoosick Falls.
Original.	Traver, Richard D.	Troy.
	Ward, R. H.	Troy.
Original.	Winship, Charles A.	Eagle Mills.

32

SARATOGA COUNTY.

Founder.	Babcock, Myron N.	Saratoga Springs.
Founder.	Comstock, George F.	Saratoga Springs.
Founder.	Creal, Charles E.	Saratoga Springs.
Original.	Dunlop, John J.	Waterford.
Founder.	Grant, Charles S.	Saratoga Springs.
Original.	Hall, William H.	Saratoga Springs.
Founder.	Hodgman, William H.	Saratoga Springs.
	Inlay, Erwin G.	Conklingville.
Original.	Johnson, Ianthus G.	Greenfield Centre.
	Keefer, Charles W.	Mechanicsville.
Founder.	McEwen, Robert C.	Saratoga Springs.
	Moriarta, D. C.	Saratoga Springs.
Original.	Preston, John R.	Schuylerville.
Founder.	Reynolds, Tabor B.	Saratoga Springs.
Original.	Sherer, John D.	Waterford.
Original.	Stubbs, Roland H.	Waterford.

16

SCHENECTADY COUNTY.

Founder.	De La Mater, Stephen G.	Duanesburg.
	Ennis, Alexander.	Pattersonville.
	Fuller, Robert.	Schenectady.
Original.	McDonald, George E.	Schenectady.
Original.	Reagles, James R.	Schenectady.
	Steinführer, Gustavus A. F.	Schenectady.
Original.	Van Zandt, Henry C.	Schenectady.

7

SCHOHARIE COUNTY.

Original.	Hagadorn, William.	Gilboa.
Original.	Kingsley, Henry F.	Schoharie.

2

WARREN COUNTY.

Original.	Barney, Charles S.	Glens Falls.
Original.	Ferguson, James.	Glens Falls.
	Fitz Gerald, David J.	Glens Falls.
Original.	Martine, Godfrey R.	Glens Falls.

4

WASHINGTON COUNTY.

Original.	*Hinds, Frederick J.	Salem.
	Lambert, John.	Salem.
	Long, Alfred J.	Whitehall.

3

THIRD OR CENTRAL DISTRICT.

BROOME COUNTY.

	Allen, S. P.	Whitney's Point.
Founder.	Chittenden, Joseph H.	Binghamton.
Original.	Ely, Henry Oliver.	Binghamton.
	Farrington, John M.	Binghamton.
	Greene, Clark W.	Chenango Forks.
Original.	Hall, Henry C.	Leslie.
	Kenyon, Benjamin.	Triangle.
	Knapp, W. H.	Union Centre.
	McFarland, S. F.	Binghamton.
	Meacham, Isaac D.	Binghamton.
Founder.	Orton, John G.	Binghamton.
	Pierce, Edward A.	Binghamton.
	Pierson, G. E.	Kirkwood.
Founder.	Putnam, Frederick W.	Binghamton.
Original.	Race, W. F.	Binghamton.
Founder.	Richards, Charles B.	Binghamton.
	Wells, E. H.	Binghamton.

17

CAYUGA COUNTY.

Original.	Kenyon, M.	Moravia.
Original.	Laird, William R.	Auburn.

2

*Deceased.

CHEMUNG COUNTY.

Original.	Brown, Charles W.	Elmira.
	Morrell, Isaac.	Elmira.
Original.	Price, John H.	Elmira.
Original.	Ross, Frank W.	Elmira.
	Squire, Charles L.	Elmira.
	Squire, J. H.	Elmira.
Original.	Wales, Theron A.	Elmira.

7

CHENANGO COUNTY.

Founder.	Avery, George W.	Norwich.
Original.	Blair, Louis P.	McDonough.
Original.	Brooks, Leroy J.	Norwich.
	Copley, Herman D.	Bainbridge.
	Guy, John D.	Coventry.
	Hand, S. M.	Norwich.
	Hayes, Philetus A.	Afton.
Original.	Johnson, Leonard M.	Greene.
Original.	Lyman, Elijah S.	Sherburne.
Original.	Lyman, H. C.	Sherburne.
	Packer, Thurston G.	Smyrna.
	Smith, Samuel L.	Smithville.

12

CORTLAND COUNTY.

	Bradford, George D.	Homer.
Original.	Clark, DeWitt.	Marathon.
Founder.	Green, Caleb.	Homer.
	Halbert, M. L.	Cincinnatus.
Founder.	Hendrick, Henry C.	McGrawville.
	Higgins, F. W.	Cortland.
Founder.	*Hyde, Frederick.	Cortland.
Founder.	Jewett, Homer O.	Cortland.
Original.	Smith, Marcellus R.	Cincinnatus.
Original.	Tripp, John D.	Virgil.

10

DELAWARE COUNTY.

Original.	Allaben, Orson M.	Margaretville.
	Morrow, William B.	Walton.
	Smith, George C.	Delhi.

*Deceased.

Travis, Edward M. Masonville.
Original. Young, Oscar H. Sidney Centre.

5

MADISON COUNTY.

Original. Babcock, H. E. Canastota.
Original. Birdsall, Gilbert. N. Brookfield.
Bullock, Ephraim H. Cazenovia.
Burhyte, O. W. Brookfield.
Cavana, Martin. Oneida.
Original. Carpenter, Henry W. Oneida.
Drake, Frank C. Oneida.
Original. Nicholson, A. R. Madison.
Ure, Herman D. Wampsville.

9

ONONDAGA COUNTY.

Original. Aberdein, Robert. Syracuse.
Founder. Allen, Henry B. Baldwinsville.
Original. Cook, George W. Syracuse.
Founder. Dallas, Alexander J. Syracuse.
Didama, Emory A. Syracuse.
Founder. Didama, Henry D. Syracuse.
Original. Donohue, Florence O. Syracuse.
Earle, George W. Tully.
Founder. Earll, George W. Skaneateles.
Original. Edwards, Amos S. Syracuse.
Original. Edwards, George A. Syracuse.
Elder, J. S. Lysander.
Founder. Elsner, Henry L. Syracuse.
Frazee, A. Blair. Elbridge.
Original. Gillette, Charles A. Syracuse.
Original. Hatch, C. A. Syracuse.
Founder. Head, Adelbert D. Syracuse.
Original. Higgins, Seabury M. Memphis.
Original. Jacobson, Nathan. Syracuse.
Original. Knapp, Edwin A. Jamesville.
Founder. Kneeland, Jonathan. South Onondaga.
Original. Munson, W. W. Otisco.
Founder. Parsons, Israel. Marcellus.
Original. Saxer, Leonard A. Syracuse.
Stephenson, F. Halleck. Syracuse.

Founder. Van de Warker, Ely. Syracuse.
Original. Whitford, James. Onondaga Valley.
27

OTSEGO COUNTY.

Church, B. A. Oneonta.
Ford, M. L. Oneonta.
Original. Hills, Lyman H. Cooperstown.
Founder. Leaning, John K. Fly Creek.
Original. Martin, John H. Otego.
Original. Merritt, George. Cherry Valley.
Original. Sweet, Joseph. Unadilla.
Sweet, Joshua J. Unadilla.
8

SCHUYLER COUNTY.

Broderick, William P. Havana.
Roper, P. B. Alpine.
Smelzer, Baxter T. Havana.
3

SENECA COUNTY.

Allison, Henry E. Willard.
Blaine, Myron D. Willard.
Founder. Lester, Elias. Seneca Falls.
Original. Rhodes, S. D. Seneca Falls.
Founder. Schoonmaker, E. J. Magee's Corners.
Seaman, Frank G. Seneca Falls.
6

TIOGA COUNTY.

Original. Ayer, W. L. Owego.
Cady, George M. Nichols.
Original. Eastman, Robert W. Owego.
3

TOMPKINS COUNTY.

Founder. Beers, John E. Danby.
Founder. Fitch, William. Dryden.
Flickinger, John. Trumansburg.
3

FOURTH OR WESTERN DISTRICT.

ALLEGHANY COUNTY.

Original. Stephenson, James A. Scio.
Original. Wakely, Benjamin C. Angelica.

2

CATTARAUGUS COUNTY.

Ellsworth, Victor A. East Otto.
Mudge, Selden J. Olean.
Original. Tompkins, Orren A. East Randolph.

3

CHAUTAUQUA COUNTY.

Founder. Ames, Edward. Sherman.
Founder. Chace, William. Mayville.
Original. Darling, Frank B. Westfield.
Founder. Dean, Harmon J. Brocton.
Rogers, H. Raymond. Dunkirk.
Founder. Strong, Thomas D. Westfield.

6

ERIE COUNTY.

Founder. Andrews, Judson B. Buffalo.
Original. Atwood, H. L. Collins Centre.
Original. Baker, Milan. Buffalo.
Original. Banta, Rollin L. Buffalo.
Original. Barker, Arthur M. Buffalo.
Original. Bartlett, Frederick W. Buffalo.
Original. Barton, Bernard. Buffalo.
Original. Boies, Loren F. East Hamburgh.
Original. Briggs, Albert H. Buffalo.
Brown, George L. Buffalo.
Original. Burwell, George M. Buffalo.
Founder. Cronyn, John. Buffalo.
Original. Dagenais, Alphonse. Buffalo.
Original. Daniels, Clayton M. Buffalo.
Original. Dorland, Elias T. Buffalo.
Fell, George E. Buffalo.
Fowler, Joseph. Buffalo.
Frederick, Carlton C. Buffalo.
Gould, Cassius W. Buffalo.

Granger, William D. Buffalo.
Green, Stephen S. Buffalo.
Original. Greene, De Witt C. Buffalo.
Founder. Greene, Joseph C. Buffalo.
Original. Greene, Walter D. Buffalo.
Original. Harrington, D. W. Buffalo.
Hayd, Herman E. Buffalo.
Heath, William H. Buffalo.
Founder. Hoyer, F. F. Tonawanda.
Hubbell, Alvin A. Buffalo.
Original. Johnson, Thomas M. Buffalo.
Original. King, James E. Buffalo.
Long, Ben. G. Buffalo.
Original. Lynde, Uri C. Buffalo.
Original. Murray, William D. Tonawanda.
Park, Roswell. Buffalo.
Original. Pettit, John A. Buffalo.
Pohlman, Julius. Buffalo.
Original. Putnam, James W. Buffalo.
Founder. *Ring, William. Buffalo.
Founder. *Rochester, Thomas F. Buffalo.
Steele, Charles G. Buffalo.
Stockton, Charles G. Buffalo.
Strong, Orville C. Colden.
Thornton, William H. Buffalo.
Founder. Tremaine, William S. Buffalo.
Trull, H. P. Williamsville.
Original. Vaughn, Frank O. Buffalo.
Wheeler, Isaac G. Marilla.
Founder. Wyckoff, Cornelius C. Buffalo.

49

GENESEE COUNTY.

Original. Crane, Frank W. Corfu.
Founder. Jackson, Albert P. Oakfield.
Original. McNamara, Daniel L. Batavia.
Founder. Sprague, William B. Pavilion.
Founder. Townsend, Morris W. Bergen.
Woodward, C. H. Batavia.

6

LIVINGSTON COUNTY.

Brown, J. P. Tuscarora.
Dodge, Frank B. Mount Morris.

*Deceased.

Founder. Gray, John W. Avon.
Jones, George H. Fowlerville.
Kneeland, B. T. Dalton.
Original. Menzie, R. J. Caledonia.
Original. Moyer, Frank H. Moscow.

7

MONROE COUNTY.

Briggs, C. M. Fairport.
Original. Briggs, William H. Rochester.
Original. Buckley, Charles. Rochester.
Original. Buckley, James. Rochester.
Original. Burke, John J. A. Rochester.
Original. Collins, Thomas B. Rochester.
Original. Dunning, J. D. Webster.
Fenno, Henry M. Rochester.
Original. Fuller, Winfield S. Fairport.
Founder. Hovey, B. L. Rochester.
Jones, S. Case. Rochester.
Maine, Alva P. Webster.
McDougall, William D. Spencerport.
Founder. Moore, Edward M. Rochester.
Original. Moore, Edward M., Jr. Rochester.
Original. Moore, Richard Mott. Rochester.
Nold, John B. Rochester.
Original. O'Hare, Thomas A. Rochester.
Original. Pease, Joseph. Hamlin.
Preston, B. I. Rochester.
Founder. Reynolds, R. C. Pittsford.
Snook, George. Parma.

22

NIAGARA COUNTY.

Original. Clark, Simeon T. Lockport.
Eddy, George P. Lewiston.
Huggins, William Q. Sanborn.

3

ONTARIO COUNTY.

Original. Allen, Duncan S. Seneca.
Original. Allen, James H. Gorham.
Founder. Bentley, Francis R. Cheshire.
Original. Budd, J. Henry. Geneva.
Cruttenden, Albert G. Clifton Springs.

	De Laney, John Pope.	Geneva.
Original.	Hicks, W. Scott.	Bristol.
Original.	*Hollister, Edwin O.	East Bloomfield.
Founder.	Nichols, H. W.	Canandaigua.
Founder.	Simmons, E. W.	Canandaigua.
Founder.	Smith, Joseph T.	Canandaigua.
Original.	Vanderhoof, Frederick D.	Phelps.

12

ORLEANS COUNTY.

Original.	Bailey, William C.	Albion.
Original.	Barnum, Eugene E.	Waterport.
Founder.	Chapman, James.	Medina.
	Curtis, Daniel.	Jeddo.
Original.	Taylor, John H.	Holley.
Founder.	Tompkins, H. C.	Knowlesville.

6

STEUBEN COUNTY.

	Chittenden, Daniel J.	Addison.
Original.	Dunn, Jeremiah.	Bath.
Original.	Ellison, Metler D.	Canisteo.
	Fowler, Thomas B.	Cohocton.
	Hunter, Nathaniel P.	Jasper.
Original.	Jamison, John S.	Hornellsville.
Original.	Perry, Nathaniel M.	Troupsburgh.
	Robinson, Joseph W.	Hornellsville.
	Wallace, Edwin E.	Jasper.

9

WAYNE COUNTY.

Founder.	Arnold, J. Newton.	Clyde.
Founder.	Colvin, Darwin.	Clyde.
	Horton, David B.	Red Creek.
Original.	Ingraham, Samuel.	Palmyra.
	Lamont, John C.	Sodus.
Original.	Landon, Newell E.	Newark.
	Nutten, Wilbur F.	Newark.
Founder.	*Pomeroy, Charles G.	Newark.
Original.	Sayers, Alexander.	Marion.
Original.	Sprague, John A.	Williamson.
	Sprague, L. S.	Williamson.
Original.	Young, Agustus A.	Newark.

12

*Deceased.

WYOMING COUNTY.

Original.	Ellinwood, A. G.	Attica.
	Lusk, Zera J.	Warsaw.
Original.	Palmer, George M.	Pike.
Original.	Rae, Robert.	Portageville.
	Rudgers, Denton W.	Perry.

5

YATES COUNTY.

	Oliver, William.	Penn Yan.
	Smith, David M.	Penn Yan.

2

FIFTH OR SOUTHERN DISTRICT.

DUTCHESS COUNTY.

	Baker, Benjamin N.	Rhinebeck.
Original.	Barnes, Edwin.	Pleasant Plains.
Original.	Bayley, Guy Carleton.	Poughkeepsie.
Founder.	Codding, George H.	Amenia.
Founder.	Cramer, William.	Poughkeepsie.
Original.	Fletcher, Charles L.	Wing's Station.
Founder.	Kittredge, Charles S.	Fishkill-on-Hudson.
Founder.	Leroy, Irving D.	Pleasant Valley.
Founder.	Porteous, James G.	Poughkeepsie.
Founder.	Pultz, Monroe T.	Stanfordville.
Original.	Sutton, George Samuel.	East Fishkill.
Original.	Van Wyck, Richard C.	Hopewell Junction.
Original.	Young, John.	Fishkill-on-Hudson.

13

KINGS COUNTY.

Original.	Andrews, John S.	East New York.
Founder.	Baker, George W.	Brooklyn, E. D.
	Bell, A. Nelson.	Brooklyn.
	Benton, Stuart H.	Brooklyn.
	Bierwirth, Julius C.	Brooklyn.
Original.	Brundage, Amos H.	Brooklyn.
Original.	Conway, John Francis.	Brooklyn.
	Creamer, Joseph.	Brooklyn, E. D.

Creamer, Joseph, Jr. Brooklyn, E. D.
Feeley, James F. Brooklyn, E. D.
Gardiner, William F. Brooklyn.
Founder. *Hutchison, Joseph C. Brooklyn.
Original. Jenkins, John A. Brooklyn, E. D.
Jewett, F. A. Brooklyn.
Original. Leighton, Nathaniel W. Brooklyn.
Little, Frank. Brooklyn.
Original. Lloyd, T. Mortimer. Brooklyn.
Original. Lung, Jesse B. Brooklyn.
Original. McCollom, William. Brooklyn.
Original. Minard, E. J. Chapin. Brooklyn.
Original. Murray, S. J. Brooklyn.
Original. North, Nelson L. Brooklyn.
Original. Paine, Arthur R. Brooklyn.
Original. Pray, S. R. Brooklyn.
Risch, Henry F. Brooklyn.
Rochester, Thomas M. Brooklyn.
Founder. Rushmore, John D. Brooklyn.
Original. Russell, William G. Brooklyn.
Founder. Segur, Avery. Brooklyn.
Original. Shepard, A. Warren. Brooklyn.
Original. Sizer, Nelson Buell de S. Brooklyn.
Founder. Squibb, Edward H. Brooklyn.
Founder. Squibb, Edward R. Brooklyn.
Original. Steinke, Carl Otho Hermann. Brooklyn.
Sullivan, John D. Brooklyn.
Original. Thayer, William Henry. Brooklyn.
Vanderveer, J. R. Brooklyn.
Original. Wieber, George. Brooklyn.
Original. Williams, William H. Brooklyn.
Founder. Wyckoff, Richard M. Brooklyn.

40

NEW YORK COUNTY.

Agramonte, E. V. New York.
Original. Allen, S. Busby. New York.
Allen, Thomas H. New York.
Original. Arcularius, Lewis. New York.
Original. Arnold, Edmund S. F. New York.
Arnold, Glover C. New York.
Original. Bathgate, James. Morrisania, New York.
Original. Biggs, Herman M. New York.

*Deceased.

Original. Blakeman, William N. New York.
Founder. Bozeman, Nathan. New York.
Bozeman, Nathan G. New York.
Original. Bryant, Joseph D. New York.
Original. Buchanan, Alexander. New York.
Original. Bull, Charles Stedman. New York.
Bull, William T. New York.
Original. Burchard, Thomas H. New York.
Founder. Cameron, Edward M. New York.
Original. Carter, H. Skelton. New York.
Original. Chauveau, Jean F. New York.
Original. Chrystie, T. M. Ludlow. New York.
*Clark, Alonzo. New York.
Collins, Stacy B. New York.
Comfort, John E. New York.
Founder. Conover, William S. New York.
Conway, John R., Jr. New York.
Original. Curry, Walker. New York.
Damainville, Lucien. New York.
Original. Denison, C. Ellery. New York.
Original. Denison, Ellery. New York.
Founder. Dennis, Frederic S. New York.
Founder. Detmold, William. New York.
Founder. Du Bois, Abram. New York.
Original. Du Bois, Matthew B. New York.
Dudley, A. Palmer. New York.
Original. Eliot, Ellsworth. New York.
Farrington, Joseph O. New York.
Flinn, Thomas W. P. New York.
Founder. Flint, Austin. New York.
Founder. Flint, William H. New York.
Foster, George V. New York.
Frankenberg, Jacob H. New York.
Original. Furman, Guido. New York.
Original. Garrish, John P. New York.
Gill, Charles R. New York.
Gleitzmann, J. W. New York.
Goldthwaite, Henry. New York.
Founder. Gouley, John W. S. New York.
Grauer, Frank. New York.
Original. Harrison, George Tucker. New York.
Original. Hartman, Jacob. New York.
Original. Hills, S. Augden. New York.

*Deceased.

Founder.	Hinton, John H. New York.
Founder.	Hodgman, Abbott New York.
	Hubbard, Dwight L. New York.
	Hubbard, Oliver P. New York.
Founder.	Hubbard, Samuel T. New York.
Original.	Ilgen, Ernest. New York.
Founder.	Janeway, Edward G. New York.
	Jenkins, William T. New York.
	Kearney, Thomas J. New York.
Founder.	Leale, Charles A. New York.
	Lewengood, Samuel. New York.
Founder.	*Linsly, Jared. New York.
	Lockwood, Charles E. New York.
	Lukens, Anna. New York.
Founder.	Lusk, William T. New York.
	Lynch, Patrick J. New York.
	MacGregor, James R. New York.
	McIlroy, Samuel H. New York.
Founder.	McLeod, S. B. Wylie. New York.
Original.	McLochlin, James A. New York.
Original.	McNamara, Laurence J. New York.
Founder.	Manley, Thomas H. New York.
	Mathews, David. New York.
	Meier, Gottlieb C. H. New York.
Original.	Miller, William T. New York.
Original.	Miranda, Ramon L. New York.
Original.	Mitchell, Hubbard W. New York.
Original.	Murphy, John. New York.
Original.	Murray, Byron J. New York.
	Newberry, John S. New York.
Original.	Newman, Robert. New York.
Founder.	Nicoll, Henry D. New York.
Original.	Oberndorfer, Isidor P. New York.
	O'Brien, Frederick Wm. New York.
	Palmer, Edmund J. New York.
Original.	Parsons, John. New York.
	Perry, John Gardner. New York.
Original.	Porter, P. Brynberg. New York.
Founder.	Purple, Samuel S. New York.
	Ransom, H. B. New York.
	Read, Ira B. New York.
Original.	Ricketts, Benjamin M. New York.
	Roth, Julius A. New York.

*Deceased.

	Ruggles, Augustus D. New York.
Original.	Sabine, Gustavus A. New York.
	Sanders, E. New York.
Founder.	Sayre, Lewis A. New York.
Founder.	Sayre, Lewis Hall. New York.
	Sayre, Reginald H. New York.
	Shaw, Henry B. New York.
	Shrady, John. New York.
Original.	Skiff, George V. New York.
	Small, John W. New York.
Original.	Smith, J. Lewis. New York.
Original.	Smith, Samuel W. New York.
Original.	Smith, Stephen. New York.
Founder.	Taylor, Isaac E. New York.
Founder.	Thomas, T. Gaillard. New York.
	Truax, J. G. New York.
Founder.	Tucker, Carlos P. New York.
	Van Fleet, Frank. New York.
	Vincent, Ludger C. New York.
Original.	Wallach, Joseph G. New York.
	Walsh, Simon J. New York.
Founder.	Ward, Charles S. New York.
	Warner, John W. New York.
Founder.	White, Whitman V. New York.
Founder.	White, William T. New York.
Founder.	Wiener, Joseph. New York.
Founder.	Wood, Charles S. New York.
Original.	Wyeth, John A. New York.

122

ORANGE COUNTY.

	Conner, Milton C. Middletown.
Original.	Eager, William B. Middletown.
Original.	Hunt, James H. Port Jervis.
Original.	Pooler, Hiram A. Goshen.

4

PUTNAM COUNTY.

Founder.	Murdock, George W. Cold Spring.
Founder.	Young, William. Cold Spring.

2

QUEENS COUNTY.

Original.	Burns, William J. Roslyn.

35

Original. Rave, Edward G. Oyster Bay.
Original. Webb, Edwin. Hempstead.

3

RICHMOND COUNTY.

Founder. Carroll, Alfred Ludlow. New Brighton.
Founder. Johnston, Francis U. New Brighton.
Martindale, F. E. Port Richmond.
Walser, Wm. C. Port Richmond.

4

ROCKLAND COUNTY.

Founder. Govan, William. Stony Point.
Stevenson, William G. Nyack.

2

SUFFOLK COUNTY.

Original. Banks, George B. Huntington.
Original. Chambers, Martin L. Port Jefferson.
Hamill, Edward H. Islip.
Hulse, William A. Bay Shore.
Original. Lindsay, Walter. Huntington.
Founder. Woodend, William D. Huntington.

6

SULLIVAN COUNTY.

Original. Bennett, Thomas W. Jeffersonville.
De Kay, William H. Parksville.
Original. Munson, J. A. Grahamsville.

3

ULSTER COUNTY.

Original. Chambers, Jacob. Kingston.
Original. HoornBeek, Philip Du Bois. Wawarsing.
Founder. Hühne, August. Rondout.
Original. Hühne, Frederick. Rondout.
Keefe, Christopher F. Rondout.
Original. Van Hoevenberg, Henry. Kingston.
Original. Ward, Stanley M. Ellenville.

7

WESTCHESTER COUNTY.

Acker, Thomas J. Croton Landing.
Ashton, Isaiah H. Dobbs Ferry.

Original. Brush, Edward F. Mount Vernon.
Original. Coutant, Richard B. Tarrytown.
Original. Furman, J. Henry. Tarrytown.
Original. Huntington, Henry K. New Rochelle.
Founder. Husted, Nathaniel C. Tarrytown.
Original. Lyons, G. A. New Rochelle.
Founder. Pryer, William C. New Rochelle.
Original. Schmidt, H. Ernest. White Plains.
Original. Southworth, Richmond Joseph. Yonkers.
Original. Wells, William L. New Rochelle.

12

SUMMARY OF FELLOWSHIP BY DISTRICT.

First District,	96
Second District,	96
Third District,	112
Fourth District,	144
Fifth District,	217
Total Fellowship,	665

ALPHABETICAL LIST OF FELLOWS.

Abell, Ira H., Antwerp, Jefferson Co. Founder.
Aberdein, Robert, 2 Greeley Block, Syracuse, Onondaga Co. Original.
Acker, Thomas J., Croton Landing, Westchester Co.
Agramonte, E. V., 232 W. 54th St., New York, New York Co.
Allaben, Orson M., Margaretville, Delaware Co. Original.
Allen, Amos, Grafton, Rensselaer Co. Original.
Allen, Charles S., Greenbush, Rensselaer Co. Founder.
Allen, Duncan S., Seneca, Ontario, Co. Original.
Allen, Henry B., Baldwinsville, Onondaga Co. Founder.
Allen, James H., Gorham, Ontario Co. Original.
Allen, S. Busby, 145 E. 83d St., New York, New York Co. Original.
Allen, S. P., Whitney's Point, Broome Co.
Allen, Thomas H., 19 Park Ave., New York, New York Co.
Allen, William L., Greenbush, Rensselaer Co.
Allison, Henry E., Willard, Seneca Co.
Ames, Edward, Sherman, Chautauqua Co. Founder.
Andrews, John S., 14 Pennsylvania Ave., Brooklyn, Kings Co. Original.
Andrews, Judson B., Buffalo Insane Asylum, Buffalo, Erie Co. Founder.
Arcularius, Lewis, 121 E. 25th St., New York, New York Co. Original.
Armstrong, James A., Clinton, Oneida Co.
Arnold, Edmund S. F., 53 W. 38th St., New York, New York Co. Original.
Arnold, Glover C., 115 E. 30th St., New York, New York Co.
Arnold, J. Newton, Clyde, Wayne Co. Founder.
Ashton, Isaiah H., Dobbs Ferry, Westchester Co.
Atwood, H. L., Collins Centre, Erie Co. Original.
Avery, George W., Norwich, Chenango Co. Founder.
Ayer, W. L., Owego, Tioga Co. Original.
Ayres, Douglas, Fort Plain, Montgomery Co. Original.
Babcock, H. E., Canastota, Madison Co. Original.
Babcock, Myron N., Saratoga Springs, Saratoga Co. Founder.
Backus, Ogden, State Lunatic Asylum, Utica, Oneida Co. Original.
Bacon, Charles G., Fulton, Oswego Co.
Bagg, Moses M., Utica, Oneida Co. Original.
Bailey, Theodore P., 90 Eagle St., Albany, Albany Co. Founder.

Bailey, William C., Albion, Orleans Co. Original.
Baker, Benjamin N., Rhinebeck, Dutchess Co.
Baker, George W., 518 Bedford Ave., Brooklyn, E. D., Kings Co. Founder.
Baker, Milan, 471 Niagara St., Buffalo, Erie Co. Original.
Baker, Smith, Whitesborough, Oneida Co.
Banks, George B., Huntington, Suffolk Co. Original.
Banta, Rollin L., 330 Elk St., Buffalo, Erie Co. Original.
Barker, Arthur M., 137 W. Tupper St., Buffalo, Erie Co. Original.
Barnes, Edwin, Pleasant Plains, Dutchess Co. Original.
Barnum, D. Albert, Cassville, Oneida Co.
Barnum, Eugene E., Waterport, Orleans Co. Original.
Barney, Charles S., Glens Falls, Warren Co. Original.
Bartlett, Frederick W., 112 Ellicott St., Buffalo, Erie Co. Original.
Barton, Lyman, Willsborough, Essex Co. Founder.
Bartow, Bernard, 220 Franklin St., Buffalo, Erie Co.
Bates, Nelson W., Central Square, Oswego Co.
Bates, Xyris T., New Lebanon, Columbia Co. Original.
Bathgate, James, Fordham Ave., Morrisania, New York, New York Co. Original.
Bayley, Guy Carleton, Poughkeepsie, Dutchess Co. Original.
Baynes, William T., 2419 5th Ave., Troy, Rensselaer Co. Original.
Beers, John E., Danby, Tompkins Co. Founder.
Bell, A. Nelson, 113½ 2d Place, Brooklyn, Kings Co.
Benham, John C., Hudson, Columbia Co. Original.
Bennett, Thomas W., Jeffersonville, Sullivan Co. Original.
Bentley, Francis R., Cheshire, Ontario Co. Founder.
Benton, Stuart H., 1257 Bedford Ave., Brooklyn, Kings Co.
Bierwirth, Julius C., 130 Hicks St., Brooklyn, Kings Co.
Biggam, William H., Jr., Fort Plain, Montgomery Co. Original.
Biggs, Hermann M., 58 E. 25th St., New York, New York Co. Original.
Birdsall, Gilbert, N. Brookfield, Madison Co. Original.
Blaine, Myron D., Willard, Seneca Co.
Blair, Louis P., McDonough, Chenango Co. Original.
Blake, Clarence R., Northville, Fulton Co. Original.
Blakeman, William N., 28 W. 37th St., New York, New York Co. Original.
Blumer, G. Alder, State Lunatic Asylum, Utica, Oneida Co. Original.
Boies, Loren F., East Hamburgh, Erie Co. Original.
Bond, G. F. M., Asylum, Utica, Oneida Co.
Bonesteel, William N., Mill St., Troy, Rensselaer Co. Founder.
Bontecou, Reed B., 82 4th St., Troy, Rensselaer Co Original.
Booth, Wilbur H., 172 Genesee St., Utica, Oneida Co. Original.
Bozeman, Nathan, 9 W. 31st St., New York, New York Co. Founder.

Bozeman, Nathan G., 9 W. 31st St., New York, New York Co.
Bradford, George D., Homer, Cortland Co.
Briggs, Albert H., 267 Hudson St., Buffalo, Erie Co. Original.
Briggs, C. M., Fairport, Monroe Co.
Briggs, William H., 138 E. Main St., Rochester, Monroe Co. Original.
Broderick, William P., Havana, Schuyler Co.
Brooks, Leroy J., Norwich, Chenango Co. Original.
Brown, Charles W., 312 W. Church St., Elmira, Chemung Co. Original.
Brown, George L., 173 Niagara St., Buffalo, Erie Co.,
Brown, J. P., Tuscarora, Livingston Co.
Brundage, Amos H., 678 Gates Ave., Brooklyn, Kings Co. Original.
Brush, Edward N., Penna. Hosp. for the Insane, Philadelphia, Penn. Original.
Brush, Edward F., Mount Vernon, Westchester Co. Original.
Bryant, Joseph D., 66 W. 35th St., New York, New York Co. Original.
Buchanan, Alexander, 67 W. 36th St., New York, New York Co. Original.
Buckley, Charles, 127 E. Main St., Rochester, Monroe Co. Original.
Buckley, James, 127 E. Main St., Rochester, Monroe Co. Original.
Bucklin, Daniel D., 575 2d Ave., Lansingburgh, Rensselaer Co. Original.
Budd, J. Henry, Geneva, Ontario Co. Original.
Bull, Charles Stedman, 51 W. 36th St., New York, New York Co. Original.
Bull, William T., 35 W. 35th St., New York, New York Co.
Bullock, Ephraim H., Cazenovia, Madison Co.
Burbeck, Charles H., 91 1st St., Troy, Rensselaer Co. Founder.
Burchard, Thomas H., 24 W. 40th St., New York, New York Co. Original.
Burhyte, O. W., Brookfield, Madison Co.
Burke, John J. A., 65 East Ave., Rochester, Monroe Co. Original.
Burns, William J., Roslyn, Queens Co. Original.
Burton, Matthew H., 75 4th St., Troy, Rensselaer Co. Founder.
Burwell, George N., 130 Pearl St., Buffalo, Erie Co. Original.
Cady, George M., Nichols, Tioga Co.
Cameron, Edward M., 22 W. 47th St., New York, New York Co. Founder.
Carpenter, Henry W., Oneida, Madison Co. Original.
Carroll, Alfred Ludlow, New Brighton, Richmond Co. Founder.
Carter, H. Skelton, 130 E. 24th St., New York, New York Co. Original.
Case, M. W., 39 2d St., Troy, Rensselaer Co.
Casey, J. E., Mohawk, Herkimer Co.
Cavana, Martin, Oneida, Madison Co.
Chace, William, Mayville, Chautauqua Co. Founder.
Chambers, Jacob, Kingston, Ulster Co. Original.
Chambers, Martin L., Port Jefferson, Suffolk Co. Original.

Chapman, James, Medina, Orleans Co. Founder.
Chauveau, Jean F., 6 Ludlow Pl., New York, New York Co. Original.
Chittenden, Daniel J., Addison, Steuben Co.
Chittenden, Joseph H., Binghamton, Broome Co. Founder.
Chrystie, T. M. Ludlow, 216 W. 46th St., New York, New York Co. Original.
Church, B. A., Oneonta, Otsego Co.
Church, Charles A., Bloomingdale, Essex Co.
Churchill, Alonzo, 189 Genesee St., Utica, Oneida Co.
*Clark, Alonzo, 23 E. 21st St., New York, New York Co.
Clark, De Witt C., Marathon, Cortland Co. Original.
Clark, Simeon Tucker, Lockport, Niagara Co. Original.
Clarke, Wallace, 136 Park Ave., Utica, Oneida Co.
Codding, George H., Amenia, Dutchess Co. Founder.
Collins, Stacy B., 106 E. 35 St., New York, New York Co.
Collins, Thomas B., 141 E. Main St., Rochester, Monroe Co. Original.
Colvin, Darwin, Clyde, Wayne Co. Founder.
Comfort, John E., 1315 Franklin Ave., New York, New York Co.
Comstock, George F., Saratoga Springs, Saratoga Co. Founder.
Conkling, George, Durham, Greene Co. Original.
Conner, Milton C., Middletown, Orange Co.
Conover, William S., 147 E. 48th St., New York, New York Co. Founder.
Conway, John Francis, 880 Bedford Ave., Brooklyn, Kings Co. Original.
Conway, John R., Jr., 14 Lexington Ave., New York, New York Co.
Cook, George W., Syracuse, Onondaga Co. Original.
Cook, Guy Reuben, Louisville, St. Lawrence Co.
Cooley, R. N., Hannibal Centre, Oswego Co.
Cooper, William C., 81 3d St., Troy, Rensselaer Co. Original.
Cooper, William S., 81 3d St., Troy, Rensselaer Co. Founder.
Copley, Herman D., Bainbridge, Chenango Co.
Coutant, Richard B., Tarrytown, Westchester Co. Original.
Cramer, William, Poughkeepsie, Dutchess Co. Founder.
Crane, Frank W., Corfu, Genesee Co. Original.
Crawe, J. Mortimer, Watertown, Jefferson Co. Founder.
Creal, Charles E., Saratoga Springs, Saratoga Co. Founder.
Creamer, Joseph, 154 Hewes St., Brooklyn, E. D., Kings Co.
Creamer, Joseph, Jr., 168 N. 6th St., Brooklyn, E. D., Kings Co.
Crim, Frank D., 171 Genesee St., Utica, Oneida Co.
Crombie, Walter C., Schaghticoke, Rensselaer Co. Original.
Cronyn, John, 55 W. Swan St., Buffalo, Erie Co. Founder.
Crosby, Alexander H., Lowville, Lewis Co.
Cruttenden, Albert G., Clifton Springs, Ontario Co.
Curry, Walker, 21 E. 61st St., New York, New York Co. Original.

*Deceased.

Curtis, Daniel, Jeddo, Orleans Co.
Dagenais, Alphonse, 348 E. Eagle St., Buffalo, Erie Co. Original.
Dallas, Alexander J., 48 Warren St., Syracuse, Onondaga Co. Founder.
Damainville, Lucien, 122 W. 53d St., New York, New York Co.
Daniels, Clayton M., 82 N. Pearl St., Buffalo, Erie Co. Original.
Darling, Frank B. Westfield, Chautauqua Co. Original.
D'Avignon, Francis J., Au Sable Forks, Essex Co. Original.
Dean, Harmon J., Brocton, Chautauqua Co. Founder.
De Kay, William H., Parksville, Sullivan Co.
De La Mater, S. G., Duanesburg, Schenectady Co. Founder.
De Laney, John Pope, Geneva, Ontario Co.
Denison, Charles Ellery, 124 W. 13th St., New York, New York Co. Original.
Denison, Ellery, 124 W. 13th St., New York, New York Co. Original.
Dennis, Frederic S., 21 E. 21st St., New York, New York Co. Founder.
Detmold, William, 38 E. 9th St., New York, New York Co. Founder.
De Witt, Byron, Oswego, Oswego Co. Original.
de Zouche, Isaac, Gloversville, Fulton Co. Founder.
Didama, Emory A., 112 S. Salina St., Syracuse, Onondaga Co.
Didama, Henry D., 112 S. Salina St., Syracuse, Onondaga Co. Founder.
Dodge, Amos P., Oneida Castle, Oneida Co.
Dodge, Frank B., Mount Morris, Livingston Co.
Dodge, Lyndhurst C., Rouse's Point, Clinton Co. Founder.
Donohue, Florence O., 54 S. Clinton St., Syracuse, Onondaga Co. Original.
Dorland, Elias T., 86 N. Division St., Buffalo, Erie Co. Original.
Douglass, A. J., Ilion, Herkimer Co.
Douglass, Charles E., Constableville, Lewis Co.
Douglass, James W., Booneville, Oneida Co.
Dowd, Pascal M., Oswego, Oswego Co.
Drake, D. Delos, Central Square, Oswego Co.
Drake, Frank C., Oneida, Madison Co.
Du Bois, Abram, 16 W. 30th St., New York, New York Co. Founder.
Du Bois, Matthew B., 16 W. 30th St., New York, New York Co. Original.
Dudley, A. Palmer, 640 Madison Ave., New York, New York Co.
Dunlop, John J., Waterford, Saratoga Co. Original.
Dunn, Jeremiah, Bath, Steuben Co. Original.
Dunning, J. D., Webster, Monroe Co. Original.
Eager, William B., Middletown, Orange Co. Original.
Earle, George W., Tully, Onondaga Co.
Earll, George W., Skaneateles, Onondaga Co. Founder.
Eastman, Robert W., Owego, Tioga Co. Original.
Eddy, George P., Lewiston, Niagara Co.
Edgerly, Edward F., Moriah Centre, Essex Co. Founder.
Edwards, Amos S., 367 N. Salina St., Syracuse, Onondaga Co. Original.

Edwards, George A., Catharine and Lodi Sts., Syracuse, Onondaga Co. Original.
Edwards, John, Gloversville, Fulton Co.
Elder, J. Stevens, Lysander, Onondaga Co.
Eliot, Ellsworth, 48 W. 36th St., New York, New York Co. Original.
Ellinwood, A. G., Attica, Wyoming Co. Original.
Ellis, J. B., Little Falls, Herkimer Co.
Ellison, Metler D., Canisteo, Steuben Co. Original.
Ellsworth, Victor A., East Otto, Cattaraugus Co.
Elsner, Henry L., 308 N. Salina St., Syracuse, Onondaga Co. Founder.
Ely, Henry Oliver, Binghamton, Broome County. Original.
English, G. P., Booneville, Oneida Co.
Ennis, Alexander, Pattersonville, Schenectady Co.
Farrington, John M., Binghamton, Broome Co.
Farrington, Joseph O., 1991 Madison Ave., New York, New York Co.
Feely, James F., 296 Lorimer St., Brooklyn, E. D., Kings Co.
Fell, George E., 72 Niagara St., Buffalo, Erie Co.
Fenno, Henry Marshall, 77 W. Main St., Rochester, Monroe Co.
Ferguson, Everard D., 1 Union Place, Troy, Rensselaer Co Founder.
Ferguson, James, Glens Falls, Warren Co. Original.
Finder, William, Jr., 2 Union Place, Troy, Rensselaer Co. Founder.
Fitch, William, Dryden, Tompkins Co. Founder.
Fitzgerald, David J., Glens Falls, Warren Co.
Flandrau, Thomas M., Rome, Oneida Co
Fletcher, Charles L., Wing's Station, Dutchess Co. Original.
Flickinger, John, Trumansburg, Tompkins Co.
Flinn, Thomas W. P., 137 E. 28th St , New York, New York Co.
Flint, Austin, 14 W. 33d St., New York, New York Co. Founder.
Flint, William H., 37 E. 33d St., New York, New York Co. Founder.
Ford, M. L., Oneonta, Otsego Co.
Foster, George V., 109 E. 18th St., New York, New York Co.
Fowler, Joseph, 31 Church St., Buffalo, Erie Co.
Fowler, Thomas B., Cohocton, Steuben Co.
Fox, Eli, Mohawk, Herkimer Co.
Frankenberg, Jacob H., 142 E. 74th St., New York, New York Co.
Fraser, Jefferson C., Ava, Oneida Co.
Frazee, A. Blair, Elbridge, Onondaga Co.
Frederick, Carlton C., 64 Richmond Ave., Buffalo, Erie Co.
French, S. H., Amsterdam, Montgomery Co.
Fuller, Earl D., 66 Varick St., Utica, Oneida Co.
Fuller, Robert, Schenectady, Schenectady Co.
Fuller, Winfield S., Fairport, Monroe Co. Original.
Furman, Guido, 425 W. 73d St., New York, New York Co. Original.
Furman, J. Henry, Tarrytown, Westchester Co. Original.

Gardiner, W. F., 162 Sixth Ave., Brooklyn, Kings Co.
Garlock, William D., Little Falls, Herkimer Co.
Garrish, John P., 400 W. 57th St., New York, New York Co. Original.
Getty, A. H., Athens, Greene Co.
Gibson, William M., 187 Genesee St., Utica, Oneida Co.
Gill, Charles R., 124 W. 93d St., New York, New York Co.
Gillette, Charles A., S. Salina and Castle Sts., Syracuse, Onondaga Co. Original.
Gillis, William, Fort Covington, Franklin Co. Founder
Glass, James H., 170 Genesee St., Utica, Oneida Co.
Gleitzmann, J. W., 117 2d Ave., New York, New York Co.
Glidden, Charles H., Little Falls, Herkimer Co. Original.
Goldthwaite, Henry, Fifth Avenue Hotel, New York, New York Co.
Gould, Cassius W., 1428 Main St., Buffalo, Erie Co.
Gouley, John W. S., 324 Madison Ave., New York, New York Co. Founder.
Govan, William, Stony Point, Rockland Co. Founder.
Grauer, Frank, 338 E. 26 St., New York, New York Co.
Granger, William D., Asylum, Buffalo, Erie Co.
Grant, Charles S., Saratoga Springs, Saratoga Co. Founder.
Graves, Ezra, Amsterdam, Montgomery Co. Original.
Gray, John P., Utica, Oneida Co.
Gray, John W., Avon, Livingston Co. Founder.
Green, Caleb, Homer, Cortland Co. Founder.
Green, H. H., Paine's Hollow, Herkimer Co.
Green, Stephen S., 384 Swan St., Buffalo, Erie Co.
Greene, Clark W., Chenango Forks, Broome Co.
Greene, De Witt C., Buffalo, Erie Co. Original.
Greene, Joseph C., 124 E. Swan St., Buffalo, Erie Co. Founder.
Greene, Walter D., 444 Elk St., Buffalo, Erie Co. Original.
Guy, J. D., Coventry, Chenango Co.
Hagadorn, William, Gilboa, Schoharie Co. Original.
Halbert, M. L., Cincinnatus, Cortland Co.
Hall, Henry C., Leslie, Broome Co. Original.
Hall, William A., 38 Montgomery St., Syracuse, Onondaga Co. Original.
Hall, William H., Saratoga Springs, Saratoga Co. Original.
Hamill, Edward H., Islip, Suffolk Co.
Hand, S. M., Norwich, Chenango Co.
Hannan, James C., Hoosick Falls, Rensselaer Co. Founder.
Harrington, D. W., 1430 Main St., Buffalo, Erie Co. Original.
Harrison, George Tucker, 221 W. 23d St., New York, New York Co. Original.
Harvie, J. B., 565 1st St., Troy, Rensselaer Co. Founder.
Hatch, C. A., 6 E. Onondaga St., Syracuse, Onondaga Co. Original.

Hayd, Herman E., 9 Niagara St., Buffalo, Erie Co.
Hayes, Philetus A., Afton, Chenango Co.
Head, Adelbert D., Syracuse, Onondaga Co. Founder.
Heath, William H., 415 Pearl St., Buffalo, Erie Co.
Heimstreet, Thomas B., 14 Division St., Troy, Rensselaer Co. Original.
Hendrick, Henry C., McGrawville, Cortland Co. Founder.
Hicks, W. Scott, Bristol, Ontario Co. Original.
Higgins, F. W., Cortland, Cortland Co.
Higgins, Seabury M., Memphis, Onondaga Co. Original.
Hills, Lyman H., Cooperstown, Otsego Co. Original.
Hills, Samuel Augden, 53 E. 123d St., New York, New York Co. Original.
*Hinds, Frederic J., Salem, Washington Co. Original
Hinton, John H., 41 W. 32d St., New York, New York Co. Founder.
Hodgman, Abbott, 141 E. 38th St., New York, New York Co. Founder.
Hodgman, William H., 109 Caroline St., Saratoga Springs, Saratoga Co. Founder.
Holden, Arthur L., 116 South St., Utica, Oneida Co.
*Hollister, Edwin O., East Bloomfield, Ontario Co. Original.
HoornBeek, Philip Du Bois, Warwarsing, Ulster Co. Original.
Horton, David B., Red Creek, Wayne Co.
Houston, David W., 62 Oneida St., Cohoes, Albany Co. Original.
Hovey, B. L., 34 N. Fitzhugh St., Rochester, Monroe Co. Founder.
Howe, Edwin S., Saranac, Clinton Co. Original.
Hoyer, F. F., Tonawanda, Erie Co. Founder.
Hubbard, Dwight L., 344 W. 33d St., New York, New York Co.
Hubbard, Oliver P., 65 W. 19th St., New York, New York Co.
Hubbard, Samuel T., 27 W. 9th St., New York, New York Co. Founder.
Hubbell, Alvin A., 212 Franklin St., Buffalo, Erie Co.
Huggins, William Q., Sanborn, Niagara Co.
Hughes, Henry R., Clinton, Oneida Co.
Hühne, August, Rondout, Ulster Co. Founder.
Hühne, Frederick, Rondout, Ulster Co. Original.
Hulse, William A., Bay Shore, Suffolk Co.
Hunt, James G., 5 Gardner Block, Utica, Oneida Co. Original.
Hunt, James H., Port Jervis, Orange Co. Original.
Hunter, Nathaniel P., Jasper, Steuben Co.
Huntington, Henry K., New Rochelle, Westchester Co. Original.
Huntington, John W., Mexico, Oswego, Co.
Husted, Nathaniel C., Tarrytown, Westchester Co. Founder.
*Hutchison, Joseph C., 130 Hicks St., Brooklyn, Kings Co. Founder.
*Hyde, Frederick, Cortland, Cortland Co. Founder.
Ilgen, Ernest, 228 E. 13th St., New York, New York Co. Original.
Ingraham, Samuel, Palmyra, Wayne Co. Original.

*Deceased.

Inlay, Erwin G., Conklingville, Saratoga Co.
Jackson, Albert P., Oakfield, Genesee Co. Founder.
Jacobson, Nathan, 114 S. Salina St., Syracuse, Onondaga Co. Original.
Jamison, John S., Hornellsville, Steuben Co. Original.
Janeway, Edward G., 51 E. 25th St., New York, New York Co. Founder.
Jenkins, John A., 150 Milton St., Brooklyn, E. D., Kings Co. Original.
Jenkins, William T., 100 Lexington Ave., New York, New York Co.
Jewett, F. A., 334 Madison St., Brooklyn, E. D., Kings Co.
Jewett, Homer O., Cortland, Cortland Co. Founder.
Johnson, Charles M., Watertown, Jefferson Co. Founder.
Johnson, George P., Mexico, Oswego Co.
Johnson, Ianthus G., Greenfield Centre, Saratoga Co. Original.
Johnson, Leonard M., Greene, Chenango Co. Original.
Johnson, Parley H., Adams, Jefferson Co. Original.
Johnson, Richard G., Amsterdam, Montgomery Co. Original.
Johnson, Thomas M., 309 Main St., Buffalo, Erie Co. Original.
Johnston, Francis U., New Brighton, Richmond Co. Founder.
Jones, George H., Fowlerville, Livingston Co.
Jones, S. Case, 34 N. Fitzhugh St., Rochester, Monroe, Co.
Joslin, Albert A., Greig, Lewis Co.
Kearney, Thomas J., 107 Lexington Ave., New York, New York Co.
Keefe, Christopher F., Rondout, Ulster Co.
Keefer, Charles W., Mechanicsville, Saratoga Co.
Keith, Halbert Lyon, West Sand Lake, Rensselaer Co.
Kelly, John Devin, 181 Genesee St., Utica, Oneida Co.
Kenyon, Benjamin, Triangle, Broome Co.
Kenyon, M., Moravia, Cayuga Co. Original.
Kilborn, Henry F., Croghan, Lewis Co.
King, James E., 16 E. Seneca St., Buffalo, Erie Co. Original.
Kingsley, Henry F., Schoharie, Schoharie Co. Original.
Kittredge, Charles S., Fishkill-on-Hudson, Dutchess Co. Founder.
Klock, Charles M., St. Johnsville, Montgomery Co.
Knapp, Edwin A., Jamesville, Onondaga Co. Original.
Knapp, W. H., Union Centre, Broome Co.
Kneeland, B. T., Dalton, Livingston Co.
Kneeland, Jonathan S., Onondaga, Onondaga Co. Founder.
Kuhn, William, Rome, Oneida Co.
La Bell, Martin J. Lewis, Essex Co. Original.
Laird, William R., 98 Wall St., Auburn, Cayuga Co. Original.
Lambert, John, Salem, Washington Co.
Lamont, John C., Sodus, Wayne Co.
Landon, Newell E., Newark, Wayne Co. Original.
Leach, H. M., Glen, Montgomery Co. Original.
Leale, Charles A., 604 Madison Ave., New York, New York Co. Founder.

Leaning, John K., Fly Creek, Otsego Co. Founder.
Leighton, N. W., 143 Taylor St., Brooklyn, E. D., Kings Co. Original.
Le Roy, Irving D., Pleasant Valley, Dutchess Co. Founder.
Lester, Elias, Seneca Falls, Seneca Co. Founder.
Lester, Sullivan W., 381 1st St., Troy, Rensselaer Co. Original.
Lewengood, Samuel, 129 E. 84th St., New York, New York Co.
Lindsay, Walter, Huntington, Suffolk Co. Original.
*Linsly, Jared, 22 Lafayette Place, New York, New York Co. Founder.
Little, Frank, 135 Remson St., Brooklyn, Kings Co.
Lloyd, T. Mortimer, 265 Henry St., Brooklyn, Kings Co. Original.
Lockwood, Charles E., 63 W. 36th St., New York, New York Co.
Lockwood, J. W., Philmont, Columbia Co. Original.
Long, Alfred J , Whitehall, Washington Co.
Long, Ben G., 1430 Main St., Buffalo, Erie Co.
Lukens, Anna, 1068 Lexington Ave., New York, New York Co.
Lung, Jesse B., 662 Herkimer St., Brooklyn, Kings Co. Original.
Lusk, William T., 47 E. 34th St., New York, New York Co. Founder.
Lusk, Zera J., Warsaw, Wyoming Co.
Lyman, Elijah S., Sherburne, Chenango Co. Original.
Lyman, H. C., Sherburne, Chenango Co. Original.
Lynch, Patrick J., 216 E. 13th St., New York, New York Co.
Lynde, Uri C., 13 Niagara St., Buffalo, Erie Co. Original.
Lyon, E. M., Plattsburgh, Clinton Co. Founder.
Lyon, George E., Troy, Rensselaer Co. Original.
Lyons, G. A , New Rochelle, Westchester Co. Original.
MacGregor, James R., 1037 Madison Ave., New York, New York Co.
Magee, Daniel, 116 3d St., Troy, Rensselaer Co. Original.
Maine, Alvah P., Webster, Monroe Co.
Manley, Thomas H., 302 W. 53d St., New York, New York Co. Founder.
Marsh, James P., 71 George St., Green Island, Albany Co.
Martin, John H., Otego, Otsego Co. Original.
Martindale, F. E., Port Richmond, Richmond Co.
Martine, Godfrey R., Glens Falls, Warren Co. Original.
Matthews, David, 107 E. 55th St., New York, New York Co.
McCollom, William, 195 Lefferts Place, Brooklyn, Kings Co. Original.
McDonald, George E., Schenectady, Schenectady Co. Original.
McDougall, William D., Spencerport, Monroe Co. (San José, Cal.)
McEwen, Robert C., Saratoga Springs, Saratoga Co. Founder.
McFarland, S. F., Binghamton, Broome Co.
McGann, Thomas, Wells, Hamilton Co.
McIlroy, Samuel H., 330 Alexander Ave., New York, New York Co.
McLeod, S. B. Wylie, 247 W., 23d St., New York, New York Co. Founder.
McLochlin, James A., 203 7th Ave., New York, New York Co. Original.

*Deceased.

McNamara, Daniel L., Batavia, Genesee Co. Original.
McNamara, Laurence J., 126 Washington Place (West), New York, New York Co. Original.
McTammany, William F., 192 3d St., Troy, Rensselaer Co. Original.
Meacham, Isaac D., Binghamton, Broome Co.
Meier, Gottlieb C. H., 215 E. 53d St., New York, New York Co.
Menzie, R. J., Caledonia, Livingston Co. Original.
Merritt, George, Cherry Valley, Otsego Co. Original.
Miller, J. H., Alosta, Los Angeles Co., Cal.
Miller, William T., 310 W. 27th St., New York, New York Co. Original.
Minard, E. J. Chapin, 243 Quincy St., Brooklyn, Kings Co. Original.
Miranda, Ramon L., 54 W. 37th St., New York, New York Co. Original.
Mitchell, Howard E., 45 5th St., Troy, Rensselaer Co. Founder.
Mitchell, Hubbard W., 747 Madison Ave., New York, New York Co. Original.
Moore, Edward M., 74 S. Fitzhugh St., Rochester, Monroe Co. Founder.
Moore, Edward M., Jr., 74. S. Fitzhugh St., Rochester, Monroe Co. Original.
Moore, Richard Mott, 74 S. Fitzhugh St., Rochester, Monroe Co. Original.
Moriarta, D. C., Saratoga Springs, Saratoga Co.
Morrell, Isaac, 218 Madison Ave., Elmira, Chemung Co.
Morrow, William B., Walton, Delaware Co.
Moyer, Frank H., Moscow, Livingston Co. Original.
Mudge, Selden J., Olean, Cattaraugus Co.
Munger, Charles, Knoxborough, Oneida Co.
Munson, J. A., Grahamsville, Sullivan Co. Original.
Munson, W. W., Otisco, Onondaga Co. Original.
Murdock, George W., Cold Spring, Putnam Co. Founder.
Murphy, John, 219 E. 37th St., New York, New York Co. Original.
Murray, Byron J., 308 W. 28th St., New York, New York Co. Original.
Murray, S. J., Pomona, Cumberland Co., Tenn. Original.
Murray, William D., Tonawanda, Erie Co. Original.
Nelson, George W., Orwell, Oswego Co.
Nelson, William H., Taberg, Oneida Co.
Newberry, John S., Columbia College, New York, New York Co.
Newman, Robert, 68 W. 36th St., New York, New York Co. Original.
Nichols, Calvin E., 57 4th St., Troy, Rensselaer Co. Founder.
Nichols, H. W., Canandaigua, Ontario Co. Founder.
Nichols, William H., West Sand Lake, Rensselaer Co. Founder.
Nicholson, A. R., Madison, Madison Co. Original.
Nicoll, Henry D., 7 W. 39th St., New York, New York Co. Founder.
Nold, John B., 165 North Ave., Rochester, Monroe Co.
North, Nelson L., 108 Ross St., Brooklyn, E. D., Kings Co. Original.
Nutten, Wilbur F., Newark, Wayne Co.

Oberndorfer, Isidor P., 127 E. 64th St., New York, New York Co. Original.
O'Brien, Frederick Wm., 284 E. 112th St., New York, New York Co.
O'Hare, Thomas A., 157 State St., Rochester, Monroe Co. Original.
Oliver, William, Penn Yan, Yates Co.
Orton, John G., Binghamton, Broome Co. Founder.
Packer, Thurston, G., Smyrna, Chenango Co.
Paine, Arthur R., 479 Clinton Ave., Brooklyn, Kings Co. Original.
Palmer, Edmund J., 131 E. 86th St., New York, New York Co.
Palmer, George M., Pike, Wyoming Co. Original.
Palmer, Henry C., cor. Genesee and Hopper Sts., Utica, Oneida Co.
Palmer, Walter B., 30 South St., Utica, Oneida Co.
Park, Roswell, 305 Delaware Ave., Buffalo, Erie Co.
Parr, John, Buel, Montgomery Co.
Parsons, Israel, Marcellus, Onondaga Co. Founder.
Parsons, John, Bailey Ave., near Kingsbridge Road, New York, New York Co. Original.
Parsons, W. W. D., Fultonville, Montgomery Co.
Pease, Joseph, Hamlin, Monroe Co. Original.
Perry, John Gardner, 48 E. 34th St., New York, New York Co.
Perry, Nathaniel M., Troupsburgh, Steuben Co. Original.
Peters, Samuel, 86 Mohawk St., Cohoes, Albany Co. Founder.
Pettit, John A., 526 S. Division St., Buffalo, Erie Co. Original.
Pierce, Edward A., Binghamton, Broome Co.
Pierson, George E., Kirkwood, Broome Co.
Pilgrim, Charles W., State Lunatic Asylum, Utica, Oneida Co. Original.
Pohlman, Julius, Library Building, Buffalo, Erie Co.
Pollard, Abiather, Westport, Essex Co. Original.
*Pomeroy, Charles G., Newark, Wayne Co. Founder.
Pooler, Hiram A., Goshen, Orange Co. Original.
Porteous, James G., Poughkeepsie, Dutchess Co. Founder.
Porter, Harry N., 1910 Harewood Ave., Washington, D. C. Founder.
Porter, P. Brynberg, 22 W. 31st St., New York, New York Co. Original.
Potter, Vaughn C., Starkville, Herkimer Co. Original.
Pray, S. R., 198 S. 9th St., Brooklyn, Kings Co. Original.
Preston, John R., Schuylerville, Saratoga Co. Original.
Preston, B. I., 31 Chestnut St., Rochester, Monroe Co.
Price, John H., 523 Union St., Elmira, Chemung Co. Original.
Pryer, William C., New Rochelle, Westchester Co. Founder.
Pultz, Monroe T., Stanfordville, Dutchess Co. Founder.
Purple, Samuel S., 36 W. 22d St., New York, New York Co. Founder.
Putnam, Frederick W., Binghamton, Broome Co. Founder.
Putnam, James W., 130 Pearl St., Buffalo, Erie Co. Original.

*Deceased.

Quin, Hamilton S., 171 Genesee St., Utica, Oneida Co.
Race, W. F., Binghamton, Broome Co. Original.
Rae, Robert, Portageville, Wyoming Co. Original.
Rand, Hannibal W., Keene, Essex Co. Original.
Ransom, H. B., 9 W. 28th St., New York, New York Co. (Burlington, Iowa.)
Rave, Edward G., Hicksville, Queens Co. Original.
Read, Ira B., 18 E. 126th St., New York, New York Co.
Reagles, James, Schenectady, Schenectady Co. Original.
Reid, Christopher C., Rome, Oneida Co.
Reynolds, R. C., Pittsford, Monroe Co. Founder.
Reynolds, Tabor B., Saratoga Springs, Saratoga Co. Founder.
Rhodes, S. D., Seneca Falls, Seneca Co. Original.
Rice, Isaac, Bloomingdale, Essex Co. Original.
Richards, Charles B., Binghamton, Broome Co. Founder.
Ricketts, Benjamin M., 93 E. 4th St., Cincinnati, Ohio. Original.
Riley, Andrew W., Au Sable Forks, Clinton Co. Original.
*Ring, William, 364 Niagara St., Buffalo, Erie Co. Founder.
Risch, Henry F., 208 17th St., Brooklyn, Kings Co.
Robb, William H., Amsterdam, Montgomery Co. Founder.
Roberts, John L. D , New York Mills, Oneida Co.
Robinson, Ezra A., Jay, Essex Co. Original.
Robinson, Joseph W., Hornellsville, Steuben Co.
*Rochester, Thomas F., 216 Franklin St., Buffalo, Erie Co. Founder.
Rochester, Thomas M., 2 St. James Place, Brooklyn, Kings Co.
Rogers, H. Raymond, Dunkirk, Chautauqua Co.
Rogers, S. Frank, 123 Vail Ave., Troy, Rensselaer Co. Original.
Roper, P. B., Alpine, Schuyler Co.
Ross, Frank W., 251 Baldwin St., Elmira, Chemung Co. Original.
Roth, Julius A., 308 E. 79th St., New York, New York Co.
Rousseau, Zotique, 99 2d St., Troy, Rensselaer Co. Founder.
Rudgers, Denton W., Perry, Wyoming Co.
Ruggles, Augustus D., 59 E. 9th St., New York, New York Co.
Rulison, Elbert T., Amsterdam, Montgomery Co. Original.
Rushmore, John D., 129 Montague St., Brooklyn, Kings Co. Founder.
Russell, Charles P., 198 Genesee St., Utica, Oneida Co.
Russell, William G., 63 Lee Ave., Brooklyn, E. D., Kings Co. Original.
Sabin, Robert H., 245 Broadway, West Troy, Albany Co. Founder.
Sabin, William B., 245 Broadway, West Troy, Albany Co. Founder.
Sabine, Gustavus A., 8 E. 24th St., New York, New York Co. Original.
Sanders, E., 126 E. 82d St., New York, New York Co.
Sawyer, Conant, Au Sable Forks, Essex Co. Founder.
Saxer, Leonard A., N. Salina and Union Sts., Syracuse, Onondaga Co. Original.

*Deceased.

Sayers, Alexander, Marion, Wayne Co. Original.
Sayre, Lewis A., 285 Fifth Ave., New York, New York Co. Founder.
Sayre, Lewis Hall, 285 Fifth Ave., New York, New York Co. Founder.
Sayre, Reginald H., 285 Fifth Ave., New York, New York Co.
Schmid, H. Ernest, White Plains, Westchester Co. Original.
Schoonmaker, E. J., Magee's Corners, Seneca Co. Founder.
Segur, Avery, 281 Henry St., Brooklyn, Kings Co. Founder.
Selden, O. G., Catskill, Greene Co. Original.
Selden, Robert, Catskill, Greene Co. Original.
Seaman, Frank G., Seneca Falls, Seneca Co.
Seymour, W. Wotkyns, 105 3d St., Troy, Rensselaer Co. Founder.
Sharer, John P., Little Falls, Herkimer Co. Original.
Shaw, Henry B., 21 E. 127th St., New York, New York Co.
Shepard, A. Warner, 126 Willoughby St., Brooklyn, Kings Co. Original.
Sherer, John D., Waterford, Saratoga Co. Original.
Shrady, John, 66 W. 126 St., New York, New York Co.
Simmons, E. W , Canandaigua, Ontario Co. Founder.
Simons, Frank E., Canajoharie, Montgomery Co.
Sizer, Nelson Buell de S., 336 Greene Ave., Brooklyn, Kings Co. Original.
Skiff, George V., 1734 Broadway, New York, New York Co. Original.
Skinner, Smith A., Hoosick Falls, Rensselaer Co. Original.
Small, John W., 158 E. 39th St., New York, New York Co.
Smeallie, James A., Canajoharie, Montgomery Co.
Smelzer, Baxter T., Havana, Schuyler Co.
Smith, David M., Penn Yan, Yates Co.
Smith, George C., Delhi, Delaware Co.
Smith, H. Lyle, Hudson, Columbia Co. Original.
Smith, J. Lewis, 64 W. 56th St., New York, New York Co. Original.
Smith, Joseph T., Canandaigua, Ontario Co. Founder.
Smith, Marcellus R., Cincinnatus, Cortland Co. Original.
Smith, Samuel L., Smithville, Chenango Co.
Smith, Samuel W., 24 W. 30th St., New York, New York Co. Original.
Smith, Stephen, 574 Madison Ave., New York, New York Co. Original.
Smyth, Arthur V. H., Minaville, Montgomery Co.
Snook, George, Parma, Monroe Co.
Southworth, Malek A., Little Falls, Herkimer Co. Original.
Southworth, Richmond Joseph, Yonkers, Westchester Co. Original.
Spicer, Walter E., Holland Patent, Oneida Co.
Sprague, John A., Williamson, Wayne Co. Original.
Sprague, L. S., Williamson, Wayne Co.
Sprague, William B., Pavilion, Genesee Co. Founder.
Squibb, Edward H., 148 Columbia Heights, Brooklyn, Kings Co. Founder.
Squibb, Edward R., 152 Columbia Heights, Brooklyn, Kings Co. Founder.
Squire, Charles L., 409 E. Church St., Elmira, Chemung Co.

Squire, J. H., 409 E. Church St., Elmira, Chemung Co.
Steele, Charles G., 186 W. Genesee St., Buffalo, Erie Co.
Steinführer, Gustavus A. F., Schenectady, Schenectady Co.
Steinke, Carl Otho Hermann, 220 17th St., Brooklyn, Kings Co. Original.
Stephenson, F. Halleck, 101 Warren St., Syracuse, Onondaga Co.
Stephenson, James A., Scio, Alleghany Co. Original.
Stevenson, William G., Nyack, Rockland Co.
Stockton, Charles G., 571 Porter Ave., Buffalo, Erie Co.
Strong, Orville C., Colden, Erie Co.
Strong, Thomas D., Westfield, Chautauqua Co. Founder.
Stubbs, Roland H., Waterford, Saratoga Co. Original.
Sullivan, John D., 74 McDonough St., Brooklyn, Kings Co.
Sutton, George Samuel. East Fishkill, Dutchess Co. Original.
Sutton, H. C., Rome, Oneida Co.
Sutton, Richard E., Rome, Oneida Co.
Swartwout, Leander, Prospect, Oneida Co.
Sweet, Joseph J., Unadilla, Otsego Co. Original.
Sweet, Joshua J., Unadilla, Otsego Co.
Taylor, Isaac E., 7 E. 36th St., New York, New York Co. Founder.
Taylor, John H., Holley, Orleans Co. Original.
Tefft, Charles B., 8 Henry St., Utica, Oneida Co.
Thayer, William Henry, 171 Livingston St., Brooklyn, Kings Co. Original.
Thomas, T. Gaillard, 600 Madison Ave., New York, New York Co. Founder.
Thornton, William H., 574 Niagara St., Buffalo, Erie Co.
Todd, John B., Parish, Oswego Co.
Tompkins, H. C., Knowlesville, Orleans Co. Founder.
Tompkins, Orren A., East Randolph, Cattaraugus Co. Original.
Townsend, Morris W., Bergen, Genesee Co. Founder.
Traver, Richard D., 14 Fourth St., Troy, Rensselaer Co. Original.
Travis, Edward M., Masonville, Delaware Co.
Tremaine, Wm. S., 449 Washington St., Buffalo, Erie Co. Founder.
Tripp, John D., Virgil, Cortland Co. Original.
Truax, J. G., 17 E. 127th St., New York, New York Co.
Trull, H. P., Williamsville, Erie Co.
Tucker, Carlos P., 43 W. 26th St., New York, New York Co. Founder.
Tully, A. Melville, Oswego, Oswego Co. Original.
Turner, Melvin H., Hammondsville, Essex Co. Original.
Ure, Heman D., Wampsville, Madison Co.
Vanderhoof, Frederick D., Phelps, Ontario Co. Original.
Vanderveer, J. R., 301 Carlton Ave., Brooklyn, Kings Co.
Van de Warker, Ely, 45 Montgomery St., Syracuse, Onondaga Co. Founder.
Van Fleet, Frank, 146 E. 81st St., New York, New York Co.

Van Hoevenberg, Henry, Kingston, Ulster Co. Original.
Van Vranken, Adam T., 74 Ohio St., West Troy, Albany Co. Original.
Van Wyck, Richard C., Hopewell Junction, Dutchess Co. Original.
Van Zandt, Henry C., Schenectady, Schenectady Co. Original.
Vaughn, Frank O., 249 Swan St., Buffalo, Erie Co. Original.
Vincent, Ludger C., 52 W. 26th St., New York, New York Co.
Wagner, Charles Gray, State Lunatic Asylum, Utica, Oneida Co.
Wakely, Benjamin C., Angelica, Alleghany Co. Original.
Wales, Theron A., Elmira, Chemung Co. Original.
Wallace, Edwin E., Jasper, Steuben Co.
Wallach, Joseph G., 159 E. 62d St., New York, New York Co. Original.
Walser, William C., Port Richmond, Richmond Co.
Walsh, Simon J., 22 City Hall Place, New York, New York Co.
Ward, Charles S., 18 W. 30th St., New York, New York Co. Founder.
Ward, R. H., 53 4th St., Troy, Rensselaer Co.
Ward, Stanley M., Ellenville, Ulster Co. Original.
Warner, John W., 107 E. 72d St., New York, New York Co.
Webb, Edwin, Hempstead, Queens Co. Original.
Wells, E. H., Binghamton, Broome Co.
Wells, William L., New Rochelle, Westchester Co. Original.
West, Joseph E., 171 Genesee St., Utica, Oneida Co.
West, M. Calvin, Rome, Oneida Co.
Wheeler, Isaac G., Marilla, Erie Co.
White, Whitman V., 1522 Park Ave., New York, New York Co. Founder.
White, William T., 130 E. 30th St., New York, New York Co. Founder.
Whitford, James, Onondaga Valley, Onondaga Co. Original.
Wieber, George, 181 S. 5th St., Brooklyn, Kings Co. Original.
Wiener, Joseph, 806 Lexington Ave., New York, New York Co. Founder.
Williams, William H., 207 17th St., Brooklyn, Kings Co. Original.
Wilson, Thomas, Claverack, Columbia Co. Founder.
Winship, Charles A., Eagle Mills, Rensselaer Co. Original.
Wood, Charles S., 171 W. 47th St., New York, New York Co. Founder.
Woodend, William D., Huntington, Suffolk Co. Founder.
Woodward, C. H., Batavia, Genesee Co.
Wyckoff, Cornelius C., 482 Delaware St., Buffalo, Erie Co. Founder.
Wyckoff, Richard M., 532 Clinton Ave., Brooklyn, Kings Co. Founder.
Wyeth, John A., 267 Madison Ave., New York, New York Co. Original.
Young, Augustus A., Newark, Wayne Co. Original.
Young, John, Fishkill-on-Hudson, Dutchess Co. Original.
Young, John D., Starkville, Herkimer Co. Original.
Young, Oscar H., Sidney Centre, Delaware Co. Original.
Young, William, Cold Spring, Putnam Co. Founder. Total, 665.

Of 164 Founders, 142 remain on the list; of 286 Original Fellows, 267 remain on the list.

DECEASED FELLOWS.

Name.	Age.	County.	Place of Birth.	Date of Death.	Medical College.	Year of graduation
Adams, John G.	77	New York	New York City	June 19, 1884.	Coll. Phys. and Surg., N. Y.	1830
Ayres, Alexander	74	Montgomery	Oppenheim, N. Y.	Aug. 27, 1886.	Castleton, Vt.	1842
Church, Allen S.	62	New York	Great Barrington, Mass.	Oct. 24, 1884.	Castleton, Vt.	1848
Clark, Alonzo	80	New York	Chester, Mass.	Sept. 13, 1887.	Coll. Phys. and Surg., N. Y.	1835
Coit, William N.	52	Clinton	Plattsburgh, N. Y.	Aug. 4, 1886.	University of Pennsylvania	1856
Collins, Isaac G.	53	Westchester	Granville, N. Y.	Dec. 18, 1885.	Albany Med. Coll.	1858
Cornell, F. O.	29	Montgomery	Glenville, N. Y.	Dec. 3, 1884.	Albany Med. Coll.	1880
Cotes, J. R.	54	Genesee	Batavia, N. Y.	Mar. 20, 1884.	Med. Dep. Univ. Buffalo	1852
Davidson, John	91	Queens	New York City	Dec. 26, 1884.	Lic. N. Y. St. Med. Soc.	1829
Flint, Austin	73	New York	Petersham, Mass.	Mar. 13, 1886.	Harvard Med. Coll.	1833
Flood, Patrick Henry	72	Chemung	Pennsylvania	Mar. 12, 1886.	Geneva Med. Coll.	1845
Gay, Charles C. F.	66	Erie	Pittsfield, Mass.	Mar. 27, 1886.	Berkshire Med. Coll.	1846
Gray, John Perdue	61	Oneida	Half Moon, Pa.	Nov. 29, 1886.	University of Pennsylvania	1849
Griswold, Gaspar	29	New York	New York City	Mar. 4, 1886.	Bellevue Hospital Med. Coll.	1878
Guernsey, Desault	55	Dutchess	Wilton, N. Y.	Dec. 9, 1885.	Coll. Phys. and Surg., N. Y.	1850
Hall, John E.	38	Albany	New Marlboro', Mass.	Nov. 3, 1886.	Albany Med. Coll.	1877
Hamilton, Frank H.	73	New York	Wilmington, Vt.	Aug. 11, 1886.	University of Pennsylvania	1835
Hinds, Frederic J.	32	Washington	East Greenwich, N. Y.	April 26, 1887.	Bellevue Hospital Med. Coll.	1876
Hollister, Edwin O.	41	Ontario	Batavia, N. Y.	Oct. 8, 1887.	Bellevue Hospital Med. Coll.	1874
Hutchison, Joseph C.	60	Kings	Old Franklin, Mo.	July 17, 1887.	University of Pennsylvania	1848
Hyde, Frederick	80	Cortland	Whitney Point, N. Y.	Oct. 15, 1887.	Fairfield Med. Coll.	1836
Knapp, John H.	67	Cortland	New Fairfield, Conn.	April 30, 1886.	Chenango County Med. Soc. Geneva Med. Coll.	1843 1861

Lauer, Eugene . . .	40	New York . .	Germany	Oct. 31, 1886.	Giessen and Marburg. . . .	1868
Linsly, Jared	84	New York . .	Northfield, Conn. . .	July 12, 1887.	Coll. Phys. and Surg., N. Y. .	1829
McClellan, Christopher R.	73	Kings	Maryland	Jan. 13, 1887.	University of Maryland . .	1835
Moore, Joseph W. . .	47	Albany . . .	Troy, N. Y.	Sept. 9, 1886.	Castleton, Vt.	1859
Pask, William . . .	55	Erie . . .	England	Aug. 24, 1884.	Med. Dep. Univ. Buffalo . .	1884
Peck, M. R.	62	Warren . . .	Sand Lake, N. Y. . .	April 4, 1884.	Albany Med. Coll.	1851
Pomeroy, Charles G. .	71	Wayne . .	New York	Dec. 14, 1887.	Ontario County Med. Soc. . .	1837
					Jefferson Med. Coll.	1850
Purdy, Isaac	57	Sullivan . . .	Walkill, N. Y. . . .	Dec. 6, 1885.	Castleton, Vt.	1851
Ring, William . . .	63	Erie	United States . . .	April 20, 1887	University of Buffalo . . .	1848
Rochester, Thomas F. .	63	Erie	Rochester, N. Y. . .	May 24, 1887.	University of Pennsylvania .	1848
Slack, Henry	57	Dutchess . . .	Albany, N. Y. . . .	Dec. 10, 1886.	Albany Med. Coll.	1852
Slocum, J. O. . . .	65	Onondaga . .	Pompey, N. Y. . . .	Mar. 3, 1885.	Castleton, Vt.	1846
Stevens, Frederick P. .	31	New York . .	Ithaca, N. Y. . . .	Dec. 4, 1884.	Bellevue Hospital Med. Coll. .	1877

INDEX.

Acute mania following articular rheumatism, Dr. J. C. HANNAN, 409.
Address on medicine, Dr. JOHN CRONYN, 313.
on nosography, Dr. J. W. S. GOULEY, 176.
of the president for 1887, Dr. I. E. TAYLOR, 20.
of welcome, Dr. C. A. LEALE, 17.
ALLEN, CHARLES S., intra-rectal larvae, 417.
Ankle joint, compound dislocations of, Dr. CHAS. W. BROWN, 120.
Dr. J. D. BRYANT, 112.
Dr. W. H. CARMALT, 127.
Dr. F. S. DENNIS, 123.
Dr. FRED'K HYDE, 115.
Dr. U. C. LYNDE, 106.
Dr. E. M. MOORE, 84.
Annual report of council and minutes of sessions of the council, 472.
Annual report of library committee, 476.

BANTA, ROLLIN L., treatment of placenta praevia, 393.
Bichloride of mercury, its uses and abuses, Dr. C. S. WOOD, 58.
BIGGS, HERMANN M., micro-organisms in typhoid fever, 267.
BOZEMAN, NATHAN, chronic pyelitis successfully treated by kolpo-uretero-cystotomy, irrigation of the pelvis of the kidney, and intra-vaginal drainage, 158.
BRIGGS, W. H., remarks on gallstones, 68.
Brooklyn, small-pox in, Dr. NELSON L. NORTH, 331.
BROOKS, L. J., intra-rectal treatment of haemorrhoids, 150.
BROWN, C. W., reduction of compound dislocation of ankle joint, 120.
BRYANT, J. D., amputation in compound dislocation of ankle joint, 112.
BURWELL, GEORGE N., memoir of Thomas F. Rochester, 485.

CARMALT, W. H., remarks on compound dislocation of ankle joint, 127.
remarks on backward dislocation of elbow, 224.
CARROLL, ALFRED L., typhoid fever, 226.
Chronic pyelitis, Dr. NATHAN BOZEMAN, 155.
CLARK, ALONZO, memoirs of, 499, 505, 509.
portrait of, frontispiece.
Cold as a therapeutic agent, Dr. B. L. HOVEY, 320.
Cold, methods of applying, Dr. H. D. DIDAMA, 145.
COLVIN, DARWIN, source of haemorrhage in placenta praevia, 377.
Committee of arrangements for 1886–'87, 3.
Compound dislocations of ankle joint, Dr. C. W. BROWN, 120.
Dr. J. D. BRYANT, 112.
Dr. W. H. CARMALT, 127.
Dr. F. S. DENNIS, 123.
Dr. F. HYDE, 115.
Dr. U. C. LYNDE, 106.
Dr. E. M. MOORE, 84.
Conjunctivitis, exudative, Dr. ALVIN A. HUBBELL, 129.
Contribution to the study of hip-joint disease, Dr. NATHAN JACOBSON, 70.
Council, annual report of, 472.

CRONYN, JOHN, address on medicine, 313.
remarks on backward dislocation of elbow, 224.
remarks on heat-stroke, 330.

Delegates and invited guests at 4th annual meeting, 15.
DENNIS, F. S., compound dislocations of ankle joint, 123.
DIDAMA, H. D., methods of applying cold, 145.
remarks on gall-stones, 68.
Discussion on compound dislocation of ankle, 84.
on placenta praevia, 352.
on typhoid fever, 226.
Dislocation of radius and ulna upward and backward, Dr. U. C. LYNDE, 212.
District Branches, reports of, 434, 436, 442, 444.

Elbow, backward dislocation of, Dr. U. C. LYNDE, 212.
ELIOT, ELLSWORTH, memoir of ALONZO CLARK, 499.
Enteric fever, discussion on, 226.
Epithelioma of labia majora, Dr. THOMAS H. MANLEY, 419.
Exudative conjunctivitis, Dr. ALVIN A. HUBBELL, 129.

Fellows in attendance at 4th annual meeting, 10.
alphabetical list of, 532.
list of, by district and county, 511.
FERGUSON, E. D., aetiology of typhoid fever, 290.
remarks on chronic pyelitis, 177.
remarks on gall-stones, 69.
Fever, typhoid, 226, 259, 267, 274, 279, 290, 303.
FREDERICK, CARLTON C., haemorrhage in placenta praevia, 361.

Gall-stones, Dr. R. H. SABIN, 66.
GARRISH, JOHN P., remarks on vaccination, 346.
GAY, CHARLES CURTIS FENN, memoir of, 478.
GOULEY, J. W. S., address on nosography, 176.
recollections of ALONZO CLARK, 509.

Haemorrhoids, intra-rectal treatment of, Dr. L. J. BROOKS, 150.
HANNAN, JAMES C., acute mania following articular rheumatism, 409.
HARRISON, GEORGE TUCKER, placenta praevia, 352.
Hip-joint disease, Dr. NATHAN JACOBSON, 70.
remarks by Dr. E. M. MOORE, 82.
Hot water in surgery, Dr. THEODORE R. VARICK, 46.
HOVEY, B. L., cold as a therapeutic agent, 320.
HUBBARD, S. T., memoir of JARED LINSLY, 490.
HUBBELL, ALVIN A., exudative conjunctivitis, 129.
HUTCHINS, ALEXANDER, memoir of JOSEPH C. HUTCHISON, 495.
HUTCHISON, JOSEPH CHRISMAN, memoir of CHRISTOPHER R. MCCLELLAN, 480.
memoirs of, 493, 497.
portrait of, facing p. 493.
HYDE, FREDERICK, reduction of compound dislocation of ankle, 115.

Intra-rectal larvae, Dr. C. S. ALLEN, 417.
Intra-rectal treatment of haemorrhoids, Dr. LEROY J. BROOKS, 150.
Intra-vaginal drainage, Dr. NATHAN BOZEMAN, 158.
Irrigation of the pelvis of the kidney, Dr. NATHAN BOZEMAN, 158.

JACOBSON, NATHAN, contribution to the study of hip-joint disease, 70.
JANEWAY, EDWARD G., pathogeny of typhoid fever, 259.

Kolpo-uretero-cystotomy, Dr. NATHAN BOZEMAN, 158.

LAUER, EUGENE, memoir of, 477.
LEALE, CHARLES A., prevention of typhoid fever, 279.
address of welcome, 17.
Library committee, report of, 476.
LINSLY, JARED, memoir of, 490.
portrait of, facing p. 490.

List of Fellows, alphabetical, 532.
by district and county, 511.
Lupus of the cervix uteri and female genitalia, Dr. ISAAC E. TAYLOR, 20.
LUSK, WILLIAM T., induction of premature labor in placenta praevia, 391.
LYNDE, U. C., Amputation in compound dislocation of ankle, 106.
upward and backward dislocation of radius and ulna, 212.

MANLEY, THOMAS H., epithelioma of labia majora, 419.
McCLELLAN, CHRISTOPHER RABORG, memoir of, 480.
McLEOD, S. B. WYLIE, haemorrhage in placenta praevia, 384.
Medicine, Address on, Dr. JOHN CRONYN, 313.
Memoirs of ALONZO CLARK, 499, 505, 509.
CHARLES CURTIS FENN GAY, 478.
JOSEPH CHRISMAN HUTCHISON, 493, 495, 497.
EUGENE LAUER, 477.
JARED LINSLY, 490.
CHRISTOPHER RABORG McCLELLAN, 480.
THOMAS F. ROCHESTER, 485.
Methods of applying cold, Dr. H. D. DIDAMA, 145.
Minutes of sessions of council, 472.
MOORE, E. M., compound dislocation of ankle joint, 84.
remarks on dislocation of radius and ulna upward and backward, 222.
remarks on hip-joint disease, 82.

NORTH, NELSON L., small-pox in Brooklyn, 331.
Nosography, address on, Dr. J. W. S. GOULEY, 176.

Officers and council for 1886–'87, 1.
for 1887–'88, 5.
Officers of branch associations for 1888, 7.
ORTON, JOHN G., after-treatment in placenta praevia, 403.

Placenta praevia, Dr. ROLLIN M BANTA, 393.
Dr. DARWIN COLVIN, 377.
Dr. CARLTON C. FREDERICK, 361.
Dr. GEORGE TUCKER HARRISON, 352.
Dr. WILLIAM T. LUSK, 391.
Dr. S. B. WYLIE McLEOD, 384.
Dr. JOHN G. ORTON, 403.
Dr. WILLIAM H. ROBB, 405.
Dr. JOHN SHRADY, 398.
Dr. ISAAC E. TAYLOR, 365.
Dr. T. GAILLARD THOMAS, 388.
President's address, Dr. I. E. TAYLOR, 20.
Proceedings of 4th annual meeting, 426.
Pyelitis, chronic, Dr. NATHAN BOZEMAN, 158.

Radius and ulna, dislocation upward and backward, Dr. U. C. LYNDE, 212.
Report of committee of arrangements, 17.
council, 472.
district branches, 432.
library committee, 476.
Kings county medical association, 469.
New York county medical association, 449.
treasurer, 429.
ROCHESTER, THOMAS F., memoir of, 485.
ROCHESTER, T. M., memoir of JOSEPH C. HUTCHISON, 497.
RUSHMORE, J. D., memoir of JOSEPH C. HUTCHISON, 493.

SABIN, ROBERT H., gall-stones, 66.
SALMON, D. E., typhoid fever, 274.
SHRADY, JOHN, placenta praevia, 398.
memoir of ALONZO CLARK, 505.
Small-pox in Brooklyn, Dr. NELSON L. NORTH, 331.
Specialists, Dr. H. C. VAN ZANDT, 347.
STOCKTON, CHARLES G., typhoid fever, 303.

TAYLOR, ISAAC E., lupus of the cervix uteri and female genitalia, 20.

TAYLOR, ISAAC E., pathogeny of placenta praevia, 365.
THOMAS, T. GAILLARD, induction of premature labor in placenta praevia, 388.
Typhoid fever, Dr. HERMANN M. BIGGS, 267.
Dr. ALFRED L. CARROLL, 226.
Dr. E. D. FERGUSON, 290.
Dr. EDWARD G. JANEWAY, 259.
Dr. CHARLES A. LEALE, 279.
Dr. D. E. SALMON, 274.
Typhoid fever, Dr. CHARLES G. STOCKTON, 303.

Use of hot water in surgery, Dr. THEODORE R. VARICK, 46.

VAN ZANDT, H. C., specialists, 347.
VARICK, THEODORE R., use of hot water in surgery, 46.

WOOD, CHARLES S., bichloride of mercury, its uses and abuses, 58.

412
162